Tempest i5100W /// S5376

Version 1.2

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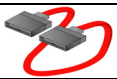
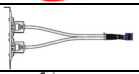
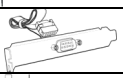
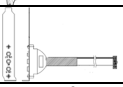
Check the box contents!

	1x S5376 motherboard
	3 x Serial ATA power cable
	1 x Ultra-DMA-133/100/66/33 IDE cable
	2 x mini SAS Cable (S5376WAG2NR)
	6 x Serial ATA Cable
	2 x USB2.0 cable
	1x Serial Port Cable
	1 x Audio cable (optional, MiTAC P/N # 422774700001)
	1 x S5376 user's manual
	1 x S5376 Quick Reference guide
	1 x TYAN driver CD
	1 x I/O shield
	2 x CPU Back Plane

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

NOTE

Chapter 1: Introduction

1.1 - Congratulations

You have purchased one of the most powerful server solutions. The Tempest i5100W (S5376) is a flexible Intel® platform for multiple applications, based on Intel® San Clemente MCH and ICH9R chipsets.

Designed to support two Intel® 5100/5200/5400 Series processors and 48GB DDR2-533/667 DIMM memory, and featured with integrated 82573V and 82573(L/V) LAN controllers, built-in 32MB XGI Z9S video plus six SATA2 ports, the S5376 offers exceptional performance and versatile solution for your server / Workstation.

Remember to visit TYAN's Website at http://www.tyan.com. There you can find information on all of TYAN's products with FAQs, online manuals and BIOS upgrades.

1.2 - Hardware Specifications

Processors
- Dual LGA771 sockets
- Supports up to two (2) Intel® 5100/5200/5400 Series processors
- 1.33 / 1.06 GHz FSB
- VRD 11.0

Chipset
- Intel® San Clemente MCH
- ICH9R South Bridge
- Winbond 83627DHG Super I/O chip

Expansion Slots
- One (1) PCI-E x16 slot w/ x16 signal from San Clemente
- Two (2) PCI-E x8 slots w/ x4 signal from San Clemente
- Three (3) 32/33 PCI 2.2 slots
- Total six (6) expansion slots

Back Panel I/O Ports
- Stacked PS/2 Mouse & Keyboard ports
- Stacked two (2) USB 2.0 ports
- One (1) 9-pin COM port
- One (1) 15-pin VGA port
- Two (2) RJ45 10/100/1000 ports with activity LED
- One (1) RJ45 10/100 port for SMDC

Integrated SATA Controller (ICH9R)
- Supports six (6) SATA2 ports running at 3.0Gb/s
- RAID 0/1/5/10 capable (Windows OS only)

Integrated Video Controller
- XGI Z9S
- 32MB DDR2 frame buffer memory

Integrated LAN Controllers
- 82573L+82573V or two 82573V

Memory
- Six (6) 240-pin DDR2 DIMM sockets
- Supports Registered ECC DIMMs
- Max. 48GB of DDR2-533/667

Optional Modules
- Optional TYAN M3295-2/M3296 SMDC support

System Management
- Winbond W83793G Hardware Monitor ASIC
- CPU thermal & voltage monitor support
- 2-pin chassis intrusion header
- Two (2) 4-pin CPU fan headers with tachometer monitoring and smart FAN control
- Three (3) 4-pin system fan headers with tachometer monitoring, and support smart FAN control

Integrated I/O
- Six (6) SATA (3Gb/s) ports
- Six (6) USB 2.0 ports (two at rear, and four via headers)
- One (1) IDE connector from Cypress CY7C68300C
- Two (2) COM ports (1 at rear, 1 via cable)
- TYAN 2x9 front panel pin header
- TYAN 2x6 front panel pin header for LAN LED and ID LED/Switch
- 2x7 pin Fan header
- One (1) SO-DIMM connector for TYAN optional SMDC M3295-2/ M3296

Integrated Audio (S5376WAG2NR)
- HD Audio (High-Definition Audio) supported
- Realtek ALC262 (High-Definition Audio) controller
- Front panel audio header (2x5 pin)
- Optional audio cable for rear panel

Integrated SAS Controller (S5376WAG2NR)
- 8 SAS ports from LSI 1068E (2 mini SAS connectors)
- LSI RAID 0/1/1E supported

BIOS
- AMI BIOS on 8Mbit Flash ROM
- Serial Console Redirect
- PXE via Ethernet, USB device boot
- PnP, DMI 2.0, WfM 2.0 Power Management
- User-configurable H/W monitoring
- Auto-configuration of hard disk types
- Multiple boot options
- 48-bit LBA support

Power
- ATX 12V
- Universal 24-pin +8-pin power connectors

Regulatory
- FCC Class B (DoC)
- CE (DoC)
- BSMI (optional)

Form Factor
- CEB footprint (10.5” x 12”)

Chapter 2: Board Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tempest i5100W S5376 matches the SSI CEB specification. Before continuing with installation, confirm that your chassis supports an SSI CEB motherboard.

How to install our products right… the first time

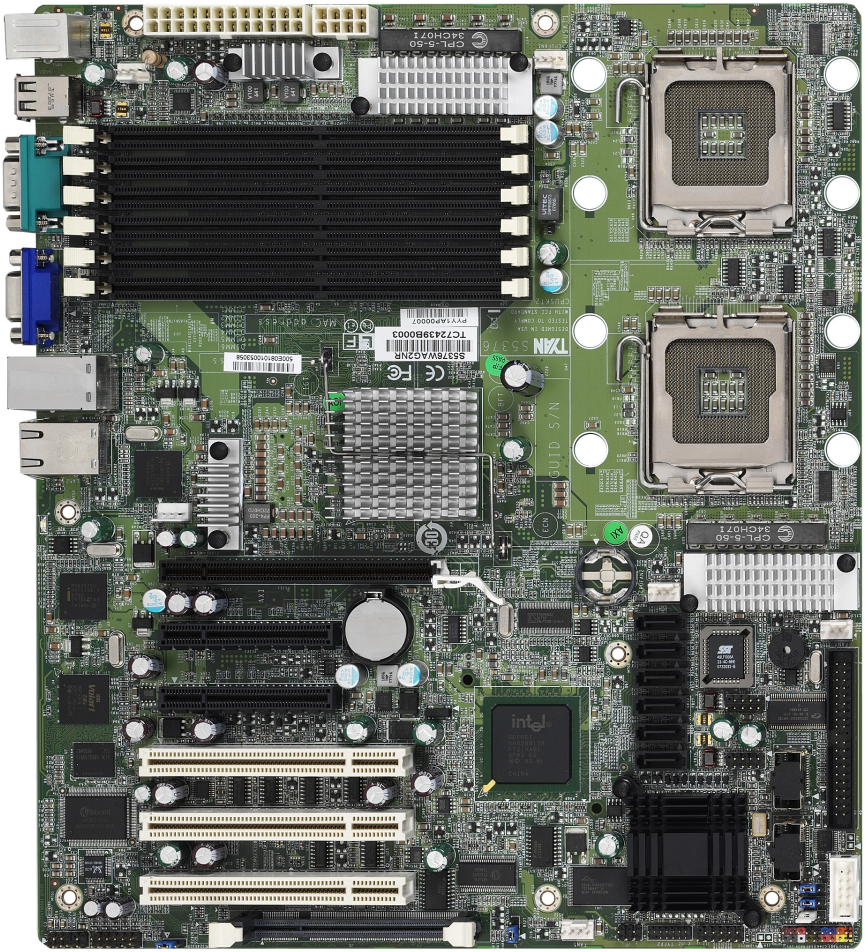
The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

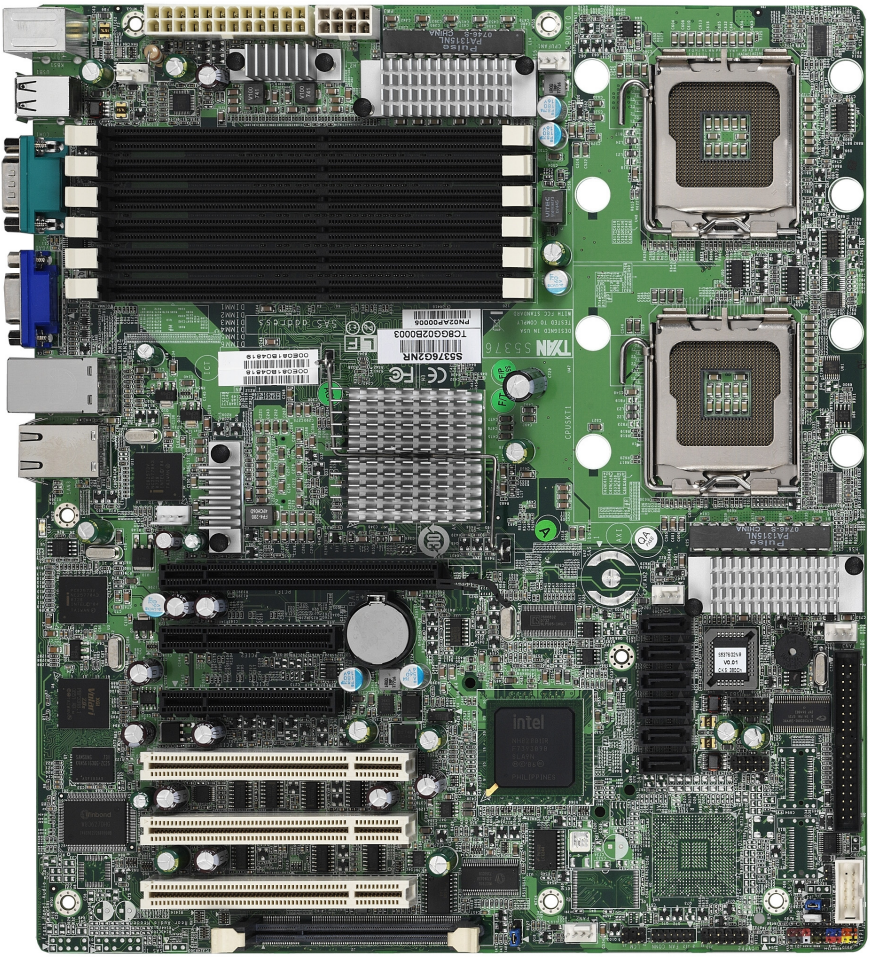
NOTE	**DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.**

2.1- Board Image



Tempest i5100W S5376WAG2NR

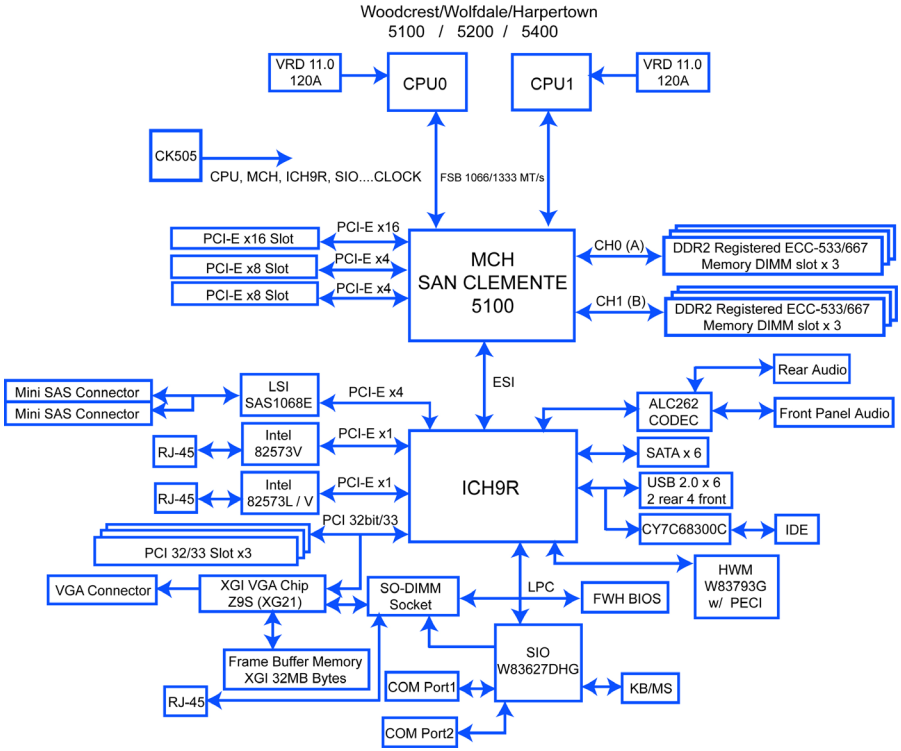
This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.



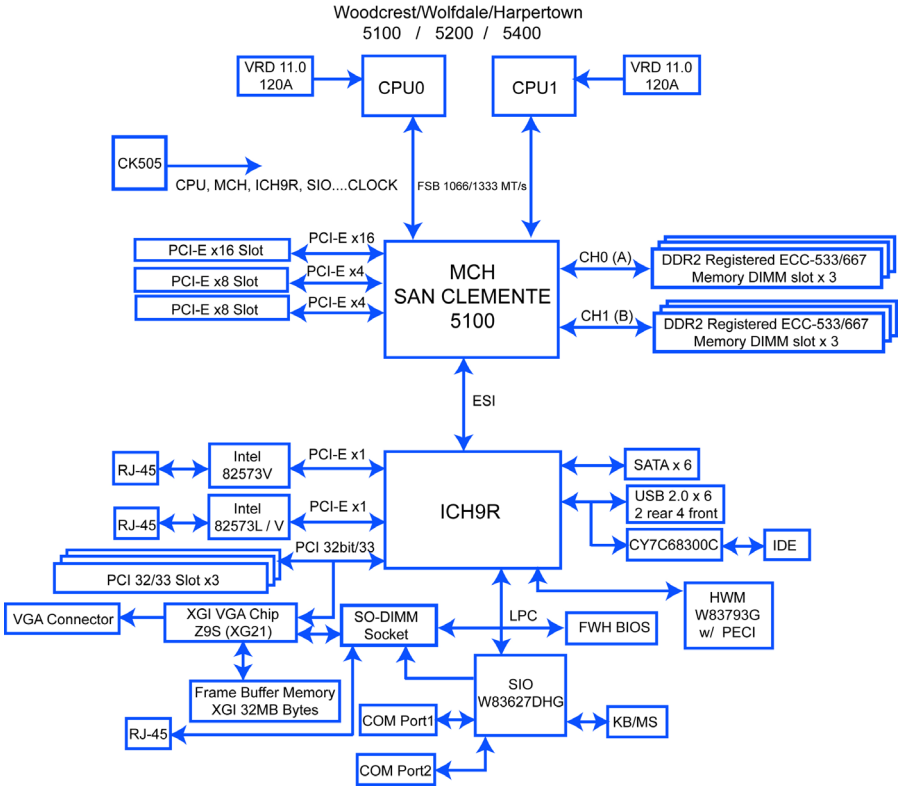
Tempest i5100W S5376G2NR

This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.

2.2 - Block Diagram

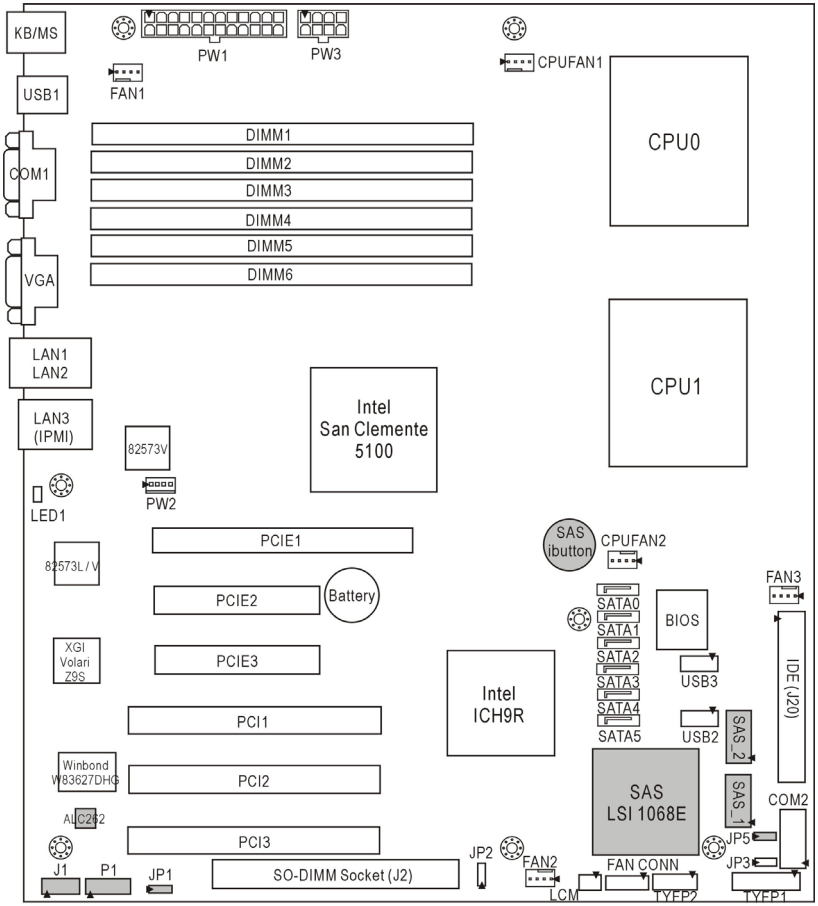


Tempest i5100W S5376WAG2NR



Tempest i5100W S5376G2NR

2.3 - Board Parts, Jumpers and Connectors



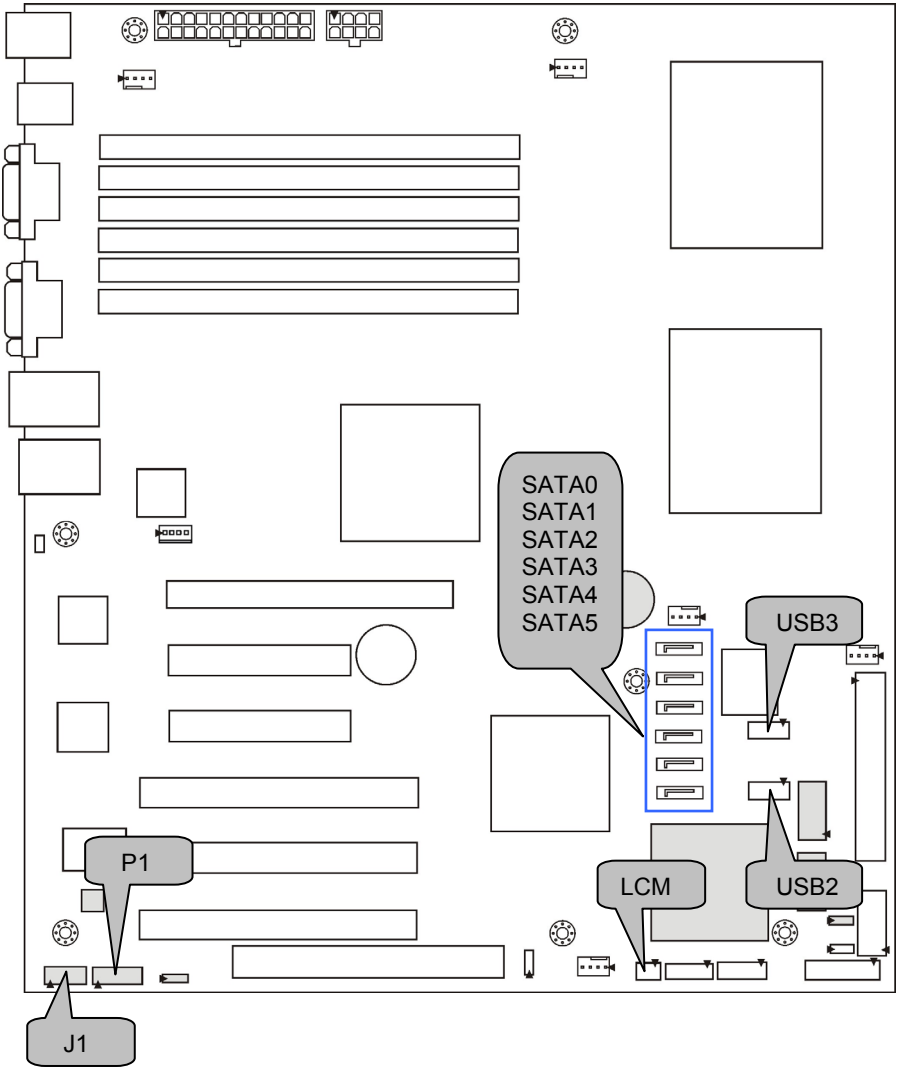
Gray blocks are for S5376WAG2NR.

This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

Jumper Legend

	OPEN - Jumper OFF, without jumper cover
	CLOSED – Jumper ON, with jumper cover

Jumper/Connector	Function
P1	Rear Audio Header
J1	Front Panel Audio Header
J2	SO-DIMM Socket
LCM (J5)	LCM Header
COM2 (J22)	COM2 Connector
USB2 (J15) / USB3 (J16)	USB Front Header
TYFP1 (J21)	Front Panel Header
TYFP2 (J13)	Front Panel Header 2 for Barebone
FAN CONN (J12)	Fan Board Header for Barebone
SATA0~SATA5	Serial ATA Connector
PW1	24-pin Power Connector (EPS12V)
PW3	8-pin Power Connector (EPS12V)
PW2	Aux. Power Connector for TYAN Riser Card (M2061)
CPUFAN1/CPUFAN2/ FAN1/FAN2/FAN3	4-pin Fan Header with Tachometer
JP1	SAS 1068E Device ID Change Jumper Pin 1-2 closed: Device ID 58 (default)
JP2	VGA Enable/Disable Jumper Pin 1-2 closed: Enable (default) Pin 2-3 closed: Disable
JP3	Clear CMOS Jumper Pin 1-2 closed: Normal (default) Pin 2-3 closed: Clear
JP5	SAS 1068E Enable/Disable Jumper Pin 1-2 closed: Enable (default) Pin 2-3 closed: Disable

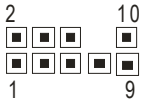

SATA0
SATA1
SATA2
SATA3
SATA4
SATA5
USB3
P1
LCM
USB2
J1

P1: Rear Audio Header (S5376WAG2NR)

Optional audio cable for rear panel is available for order (MiTAC P/N# 422774700001).

Pin	Signal	Pin	Signal
1	MIC1_L_C	2	MIC1_R_C
3	GND	4	MIC1_JD
5	LINE1_L_C	6	LINE1_R_C
7	KEY	8	LINE1_JD
9	FRONT_L_C	10	FRONT_R_C
11	NC	12	FRONT_JD

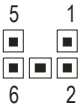
J1: Front Panel Audio Header (S5376WAG2NR)



TYAN does not provide cables for this header.

Pin	Signal	Pin	Signal
1	MIC_L	2	GND
3	MIC_R	4	PRESENT
5	LINE_R	6	MIC_JD
7	GND	8	KEY
9	LINE_L	10	LINE_JD

LCM (J5): LCM Header

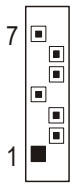


Pin	Signal	Pin	Signal
1	Link to MB V5	2	MB COM2 RX
3	KEY	4	GND
5	MB V5DUAL	6	MB COM2 TX

USB2 (J15) / USB3 (J16): USB Front Header

Pin	Signal	Pin	Signal
1	USBPWR	2	USBPWR
3	USB-N	4	USB-N
5	USB-P	6	USB-P
7	GND	8	GND
9	KEY	10	GND

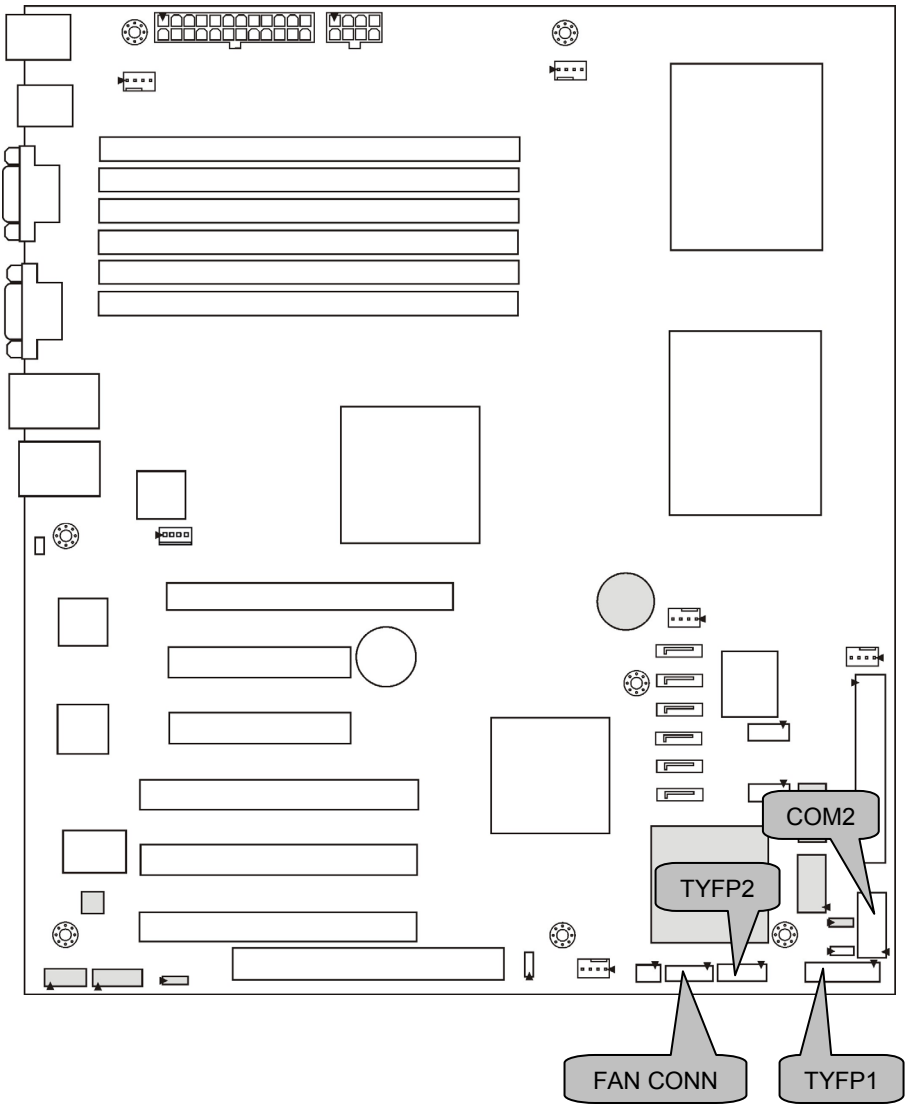
SATA0/1/2/3/4/5: Serial ATA Connector



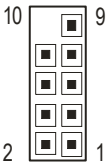
7	GND
6	RXP
5	RXN
4	GND
3	TXN
2	TXP
1	GND

Connects to the Serial ATA ready drives via the Serial ATA cable.

SATA0: J11	SATA1: J10
SATA2: J9	SATA3: J8
SATA4: J7	SATA5: J6

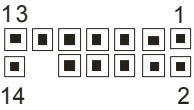

COM2
TYFP2
FAN CONN
TYFP1

COM2 (J22): COM2 Connector



Pin	Signal	Pin	Signal
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	KEY

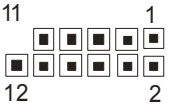
FAN CONN (J12): Fan Board Header for Barebone



It is designed for barebone use only.

Pin	Signal	Pin	Signal
1	CPU0-TACH	2	SYS4-TACH
3	CPU1-TACH	4	SYS5-TACH
5	FAN1-TACH	6	SYS6-TACH
7	FAN3-TACH	8	SYS7-TACH
9	FAN2-TACH	10	SYS8-TACH
11	GND	12	KEY
13	GND	14	HMO-FANPWM1

TYFP2 (J13): Front Panel Header 2 for Barebone



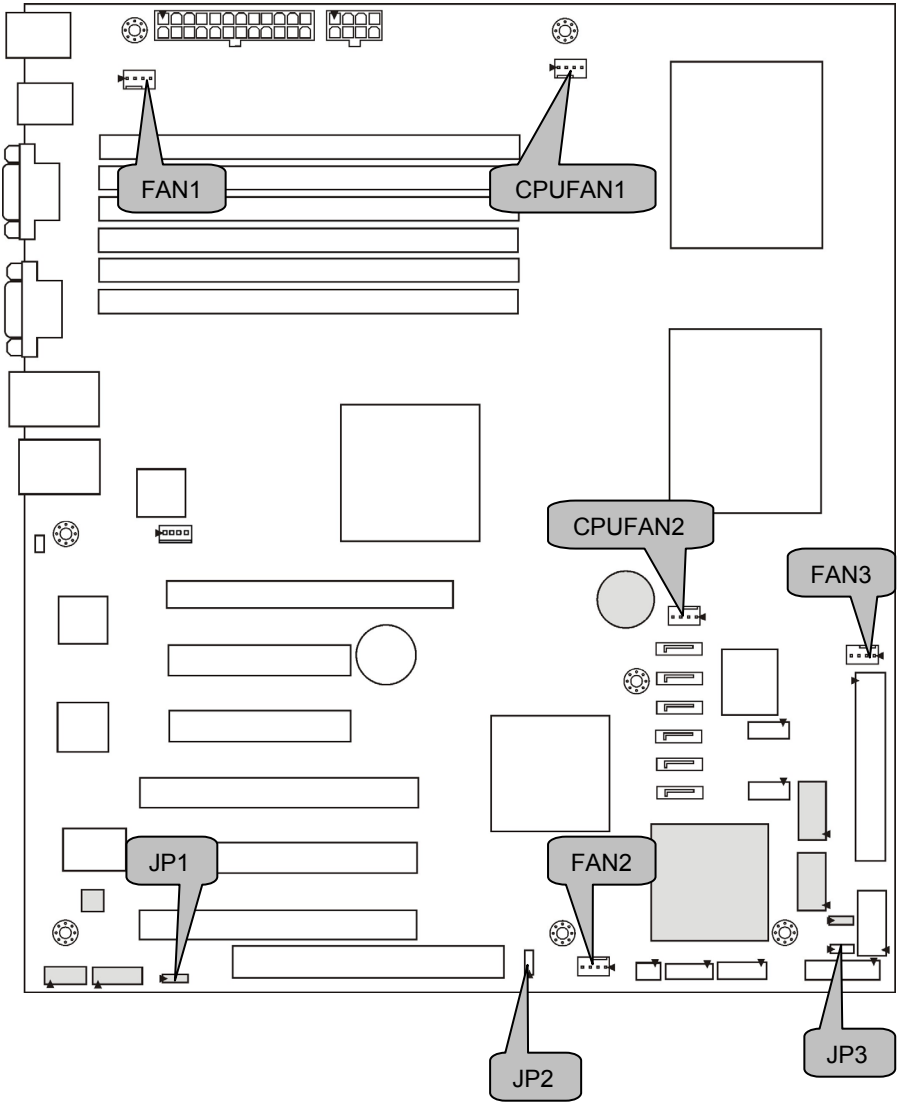
It is designed for barebone use only.

Pin	Signal	Pin	Signal
1	LAN1 LED+	2	LAN1 LED-
3	LAN2 LED+	4	LAN2 LED-
5	NC	6	NC
7	ID LED+	8	ID LED-
9	ID SW+	10	ID SW-
11	KEY	12	NC

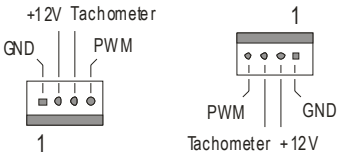
TYFP1 (J21): Front Panel Header

The Front Panel Header is used to connect some control or signal wires from motherboard to chassis, such as HDD LED, power LED, power button, and reset button.

HDDLED+	1	2	PWR LED+
HDDLED-	3	4	PWR LED-
Reset SW-	5	6	PWR SW+
Reset SW+	7	8	PWR SW-
GND	9	10	Warning LED+
Front_NMI#	11	12	Warning LED-
3VSB	13	14	Key
SMBus Data	15	16	GND
SMBus Clock	17	18	INTRU#


FAN1
CPUFAN1
CPUFAN2
FAN3
JP1
FAN2
JP2
JP3

FAN1/FAN2/FAN3/CPUFAN1/CPUFAN2: 4-pin Fan Header

	Use this header to connect the cooling fan to your motherboard to keep the system at optimum performance levels.

JP1: SAS 1068E Device ID Change Jumper

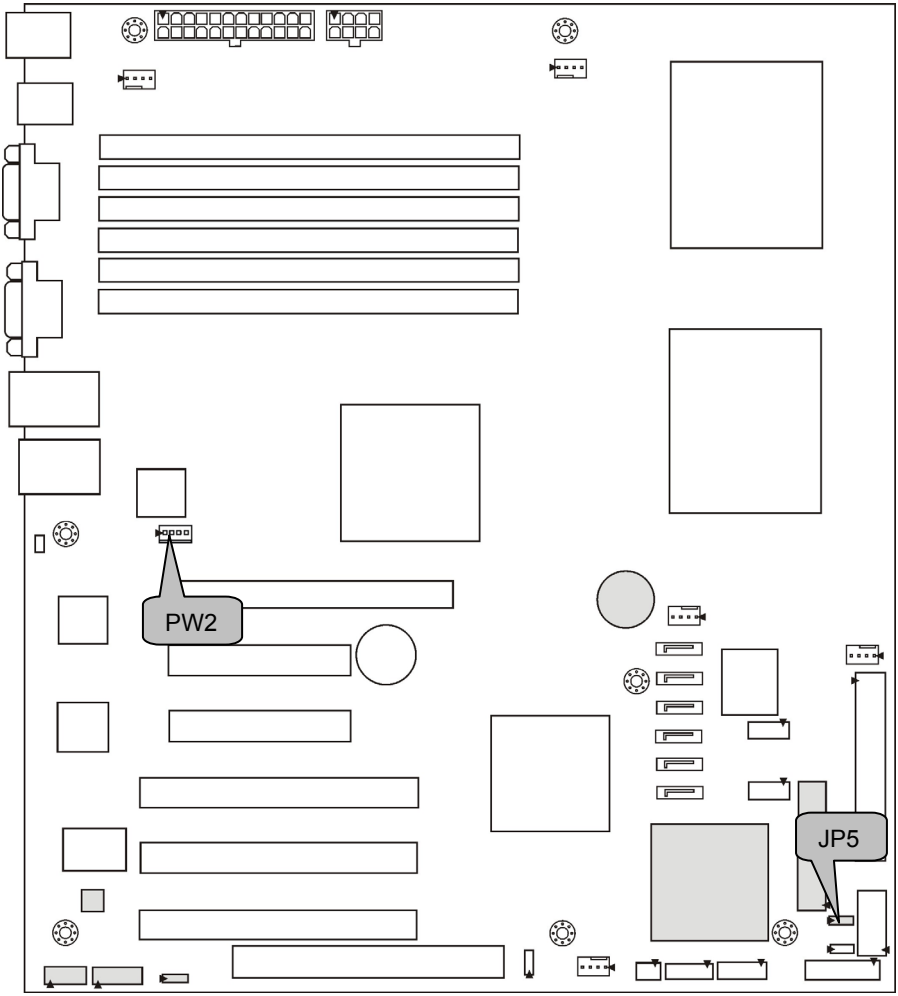
	Pin 1-2 Closed: Device ID 58 (LSI IR RAID setting, S5376WAG2NR, **Default**)

JP2: VGA Enable/Disable Jumper

	Pin 1-2 Closed: Enable (**Default**)
	Pin 2-3 Closed: Disable

JP3: Clear CMOS Jumper

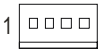
 Normal (Default)	Use this jumper when you forgot your system/setup password or need to clear system BIOS setting. How to clear the CMOS data - Power off system and **disconnect power supply from AC source** - Use jumper cap to close Pin_2 and 3 for several seconds to Clear CMOS - Replace jumper cap to close Pin_1 and 2 Reconnect power supply to AC source Power on system
 Clear	


PW2
JP5

JP5: SAS 1068E Enable/Disable Jumper (S5376WAG2NR)

	Pin 1-2 Closed: Enable (**Default**)
	Pin 2-3 Closed: Disable

PW2: Aux. Power Connector for Riser Card (M2061)



Pin	1	2	3	4
Signal	+12V	GND	GND	V5

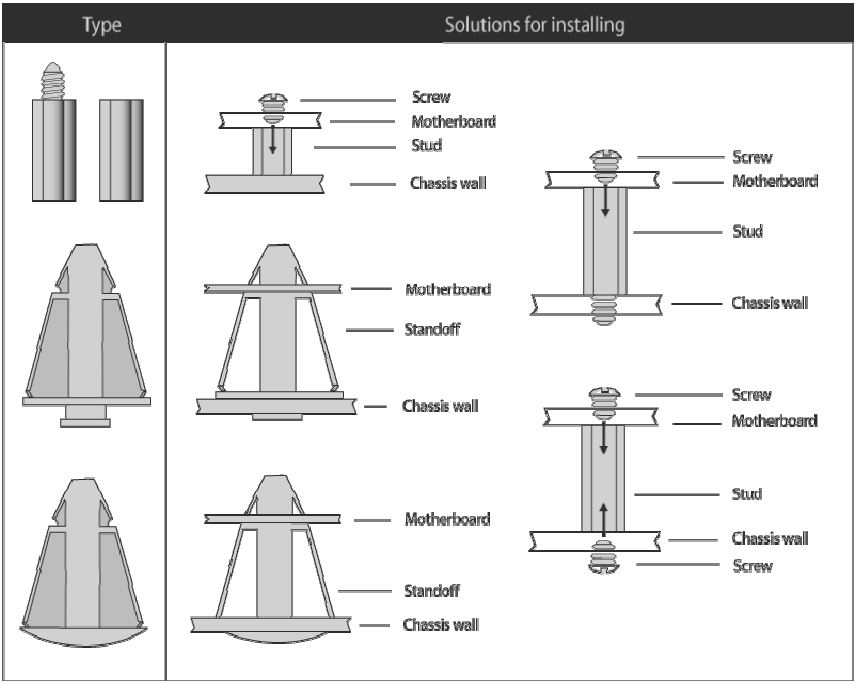
2.4 - Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.

Some chassis' include plastic studs instead of metal. Although the plastic studs are usable, TYAN recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard



2.5 - Installing the Processor(s)

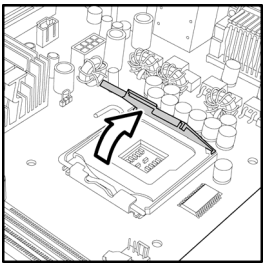
Your Tempest i5100W S5376 supports the latest processor technologies from Intel. Check the TYAN website for latest processor support:

http://www.tyan.com

Processor Installation (LGA771 Socket)
The processor should be installed carefully. Make sure you are wearing an antistatic strap and handle the processor as little as possible. Please note that both processors of the **same type and frequency** are required for optimal system performance.

Follow these instructions to install your processor.

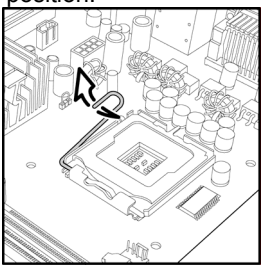
1. Locate the processor socket on the motherboard and lift the protective cover off as shown.

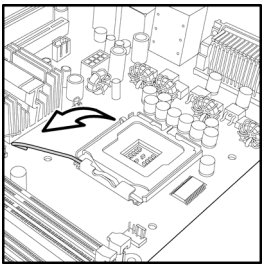


WARNING:

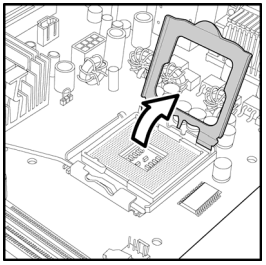
This new processor socket designed by Intel is easy to be damaged. The processor has to be installed very carefully to prevent the contact pins of the socket from breaking. It is strongly recommended the processor installation job to be handled by the experienced technician.

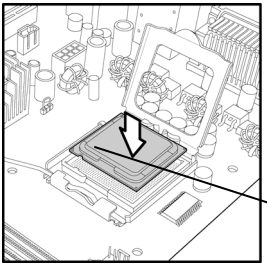
2. Pull the locking lever out of it's locked position and let it spring into the open position.



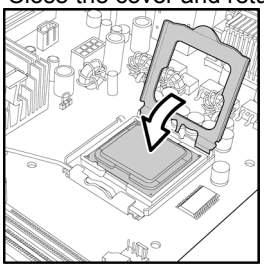


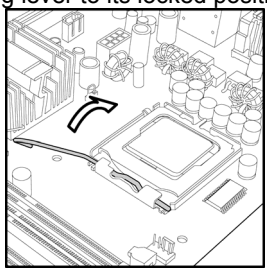
3. Lift the metal cover to expose the socket interior and place the socket in as shown.





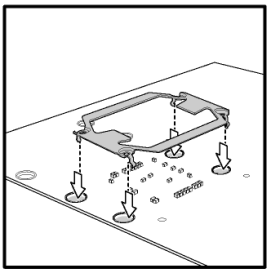
4. Close the cover and return the locking lever to its locked position.



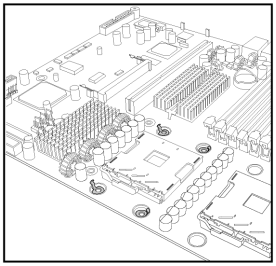


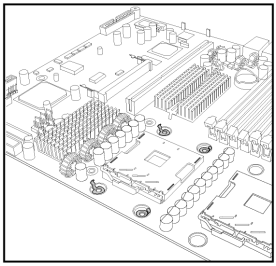
5. Repeat this procedure for the second processor socket.

6. Turn the board upside down and insert the heat sink spring mechanism as shown.



7. Turn the board the right way up again and screw the heat sink into place.





8. Repeat this procedure for the second processor.

Cooling Fan Installation

After you have installed the processor, the heatsink should be installed to ensure that the processor runs efficiently and does not overheat. Use the heatsink supplied for best results.

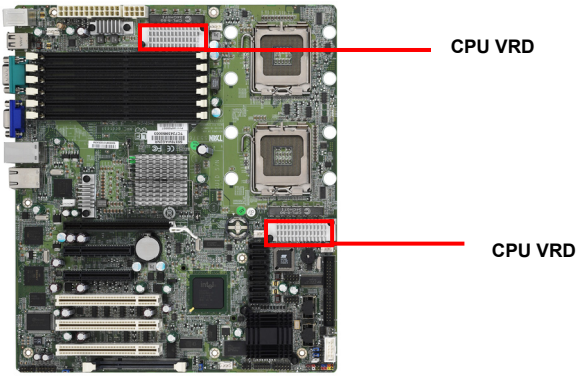
Follow these instructions to install the heatsink shown.

1. Apply some (a little will work, more doesn't equal better performance) thermal compound to the top of the processor. Try and apply a thin, even layer over the top of the processor.
2. Align the heatsink with the four holes around the processor socket.
3. Press the heatsink down until the four screws are securely seated in the holes.
4. Use screw drive to secure the four screws.

CPU VRD Heat Dispersion Notice

INSTALL FAN INTO CHASSIS TO LET AIR FLOW IN!!!

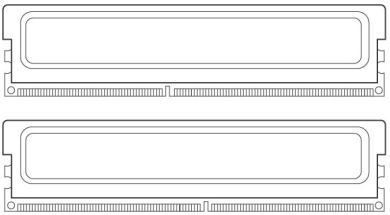
-To ensure that the board runs efficiently and does not overheat, make sure there is air flow around the CPU VRD (as shown) to help disperse the heat generated around the CPU.



2.6 - Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Only DDR2-667/533 DIMM modules are required. Check the TYAN Web site at: **www.tyan.com** for details of the type of memory recommended for your motherboard.

The following diagram shows common types of DDR2 memory modules.



Key points to note before installing memory:

- Two channels of registered ECC memory DIMMs (DDR2-667/533)
- Automatic memory bus frequency setting based on memory configuration and memory SPD information (to be adjusted by BIOS)
- Six (6) by 240-pin DDR2 DIMM sockets
- Maximum memory capacity: 48GB
- All memory must be of the **same type and density**

The following chart outlines the suggested rules for populating memory.

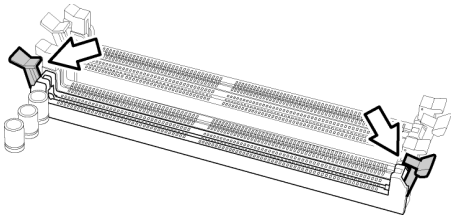
		Single Channel						Dual Channel		
		Channel 0			Channel 1			Channel 0 & 1		
Single Rank Memory	DIMM1				x	x	x	x	x	x
	DIMM2	x	x	x				x	x	x
	DIMM3					x	x		x	x
	DIMM4		x	x					x	x
	DIMM5						x			x
	DIMM6			x						x
Dual Rank Memory	DIMM1				x	x	x	x	x	x
	DIMM2	x	x	x				x	x	x
	DIMM3					x	x		x	x
	DIMM4		x	x					x	x
	DIMM5						x			x
	DIMM6			x						x

NOTE: Please refer to the mainboard layout diagram on page 12 for DIMM location.

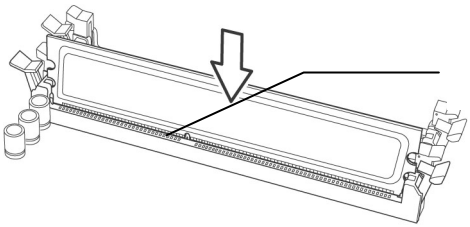
Memory Installation Procedure

Follow these instructions to install memory modules into the Tempest i5100W S5376.

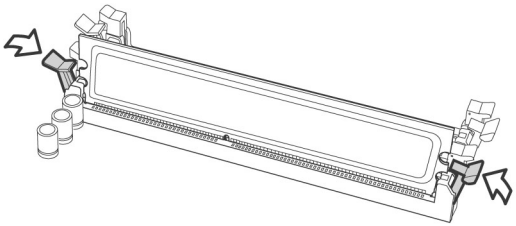
1. Press the locking levers in the direction shown in the following illustration.



2. Align the memory module with the socket. The memory module is keyed to fit only one way in the socket.



3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.



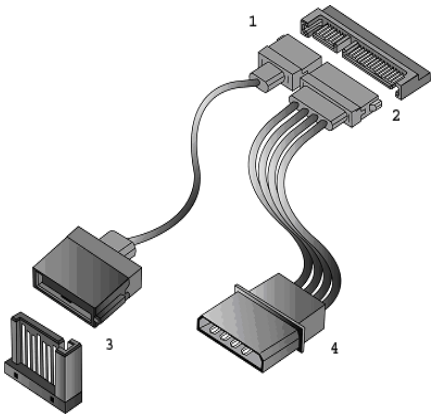
2.7 - Attaching Drive Cables

Attaching Serial ATA Cables
The Tempest i5100W S5376 is also equipped with 6 Serial ATA (SATA) channels.
Connections for these drives are also very simple.

There is no need to set Master/Slave jumpers on SATA drives.

TYAN has supplied two SATA cables and one SATA power adapter. If you are in need of other cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive



1.SATA drive cable connection

2. SATA drive power connection

3. SATA cable motherboard connector

4. SATA drive power adapter

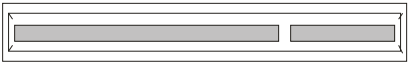
2.8 - Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that appear on your motherboard.

1 PCI-E x16 slot (w/ x16 bus)

2 PCI-E x8 slots (w/ x4 bus)

3 PCI 32/33MHz slots



Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

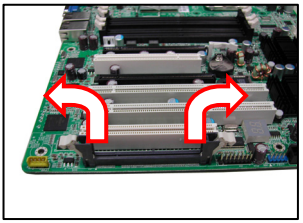
NOTE	**YOU MUST ALWAYS** unplug the power connector from the motherboard before performing system hardware changes. Otherwise you may damage the board and/or expansion device.

2.9 - Installing Optional SO-DIMM modules

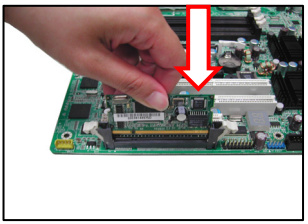
Your S5376 motherboard is equipped with an optional proprietary SO-DIMM connector. The 200-pin vertical SO-DIMM connector can be used for **TYAN M3295-2/M3296** expansion card to provide such features as additional TYAN SMDC module support. For details of available expansions cards, visit the TYAN website at http://www.tyan.com.

To install a SO-DIMM expansion card:

1. Open the spring levers as shown.

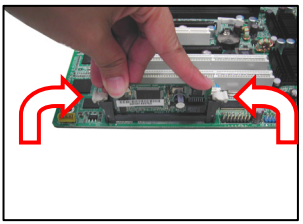


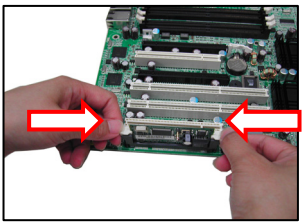
2. Insert the SO-DIMM card as shown, making sure that the card is the right way up. The card will fit in only one way and the screw holes in the card should line up exactly with the mounting posts on the motherboard.



3. Push the SO-DIMM card down into place and make sure the spring levers click into place as shown.

   NOTE: The SO-DIMM expansion cards will fit in the slot only one way. Make sure that you align the slot in the card with the key in the card slot.

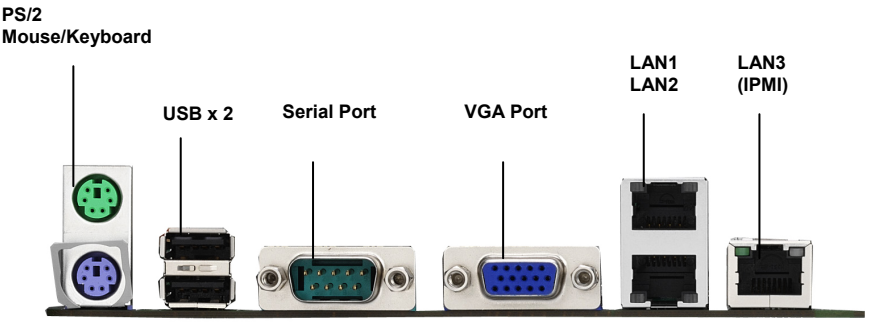




4. Removal of a SO-DIMM card is a reversal of the installation procedure. Push out the spring levers as shown and pull the card out of the socket.

2.10 - Connecting External Devices

The following diagram will detail the rear port stack for this S5376 motherboard:



NOTE: Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

Onboard LAN LED Color Definition

The three onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
LEFT RIGHT		Left LED	Right LED
10 Mbps	Link	Slow Blinking Green	Off
	Active	Blinking Green	Off
100 Mbps	Link	Slow Blinking Green	Green
	Active	Blinking Green	Green
1000 Mbps	Link	Slow Blinking Green	Orange
	Active	Blinking Green	Orange
No Link		Off	Off

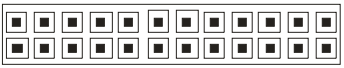
2.11 - Installing the Power Supply

There are two power connectors on your Tempest i5100W S5376. The Tempest i5100W S5376 requires 2 power inputs.

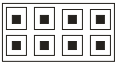
- 24-pin (PW1)
- 8-pin (PW3)

NOTE: Please be aware that ATX 2.x, ATX12V and ATXGES power supplies may **not** be compatible with the board and can damage the motherboard and/or CPU(s).

1 x 24-pin 12V Power Connector (PW1)



1 x 8-pin 12V Power Connector (PW3)



1 x 4-pin 12V/5V Power Connector (PW2, aux. power supply for TYAN Riser Card M2061)

Applying power to the board:

1. Connect the 12V 8-pin power connector.
2. Connect the EPS/12V 24-pin power connector.
3. Connect the 4-pin aux. power connector for TYAN Riser Card M2061.
4. Connect power cable to power supply and power outlet.

NOTE	**YOU MUST** unplug the power supply before plugging the power cables to motherboard connectors.

2.12 - Finishing up

Congratulations on making it this far! You're finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially IDE cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by **calling your vendor's support line.**

NOTE

Chapter 3: BIOS Setup

About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:
1. Turn on or reboot your system.
2. Press <Del> during POST (<F4> on remote console) to start the BIOS setup utility.

BIOS Menu Bar

The menu bar at the top of the windows lists these selections:

Main	To configure basic system setups
Advanced	To configure the advanced chipset features
PCI/PnP	To configure legacy Plug & Play or PCI settings
Boot	To configure system boot order
Security	To configure user and supervisor passwords
Chipset	To configure chipset management features
Exit	To exit setup utility

Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
<F1>	General help window
<ESC>	Exit current menu
← → arrow keys	Select a different menu
↑ or ↓ arrow keys	Move cursor up/down
<Tab> or <Shift-Tab>	Cycle cursor up/down
<Home> or <End>	Move cursor to top/bottom of the window
<PgUp> or <PgDn>	Move cursor to next/previous page
<->	Select the previous value/setting of the field
<+>	Select the next value/setting of the field
<F8>	Load Fail Safe default configuration values of the menu
<F9>	Load the Optimal default configuration values of the menu
<F10>	Save and exit
<Enter>	Execute command or select submenu

Getting Help

Press [**F1**] to display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**].

In Case of Problems

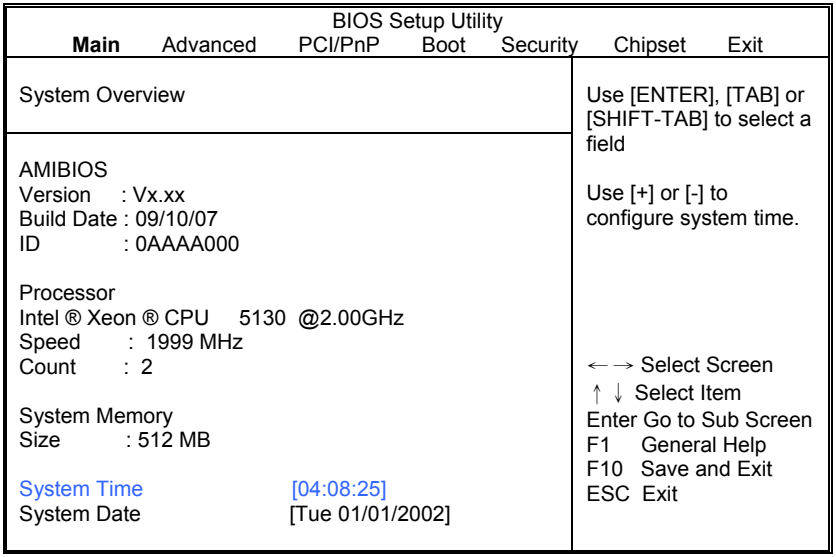
If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.
The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by TYAN or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

NOTE: The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated when this manual is written. Please visit TYAN's website at http://www.tyan.com for the information of BIOS updating.

3.1 BIOS Main Menu

The Main BIOS Menu is the first screen that you can navigate. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured, options in blue can be changed.

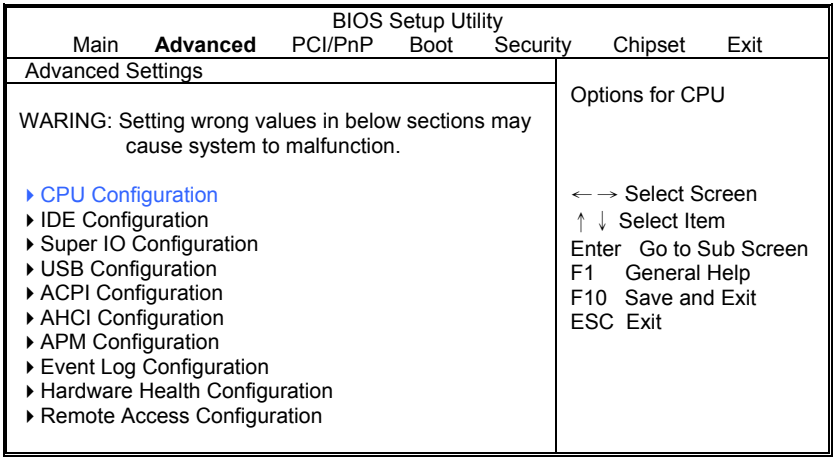
The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often, a text message will accompany it.



Feature	Option	Description
Main		
System Time	HH : MM : SS	Set the system time
System Date	MM : DD : YYYY	Set the system date

3.2 Advanced Menu

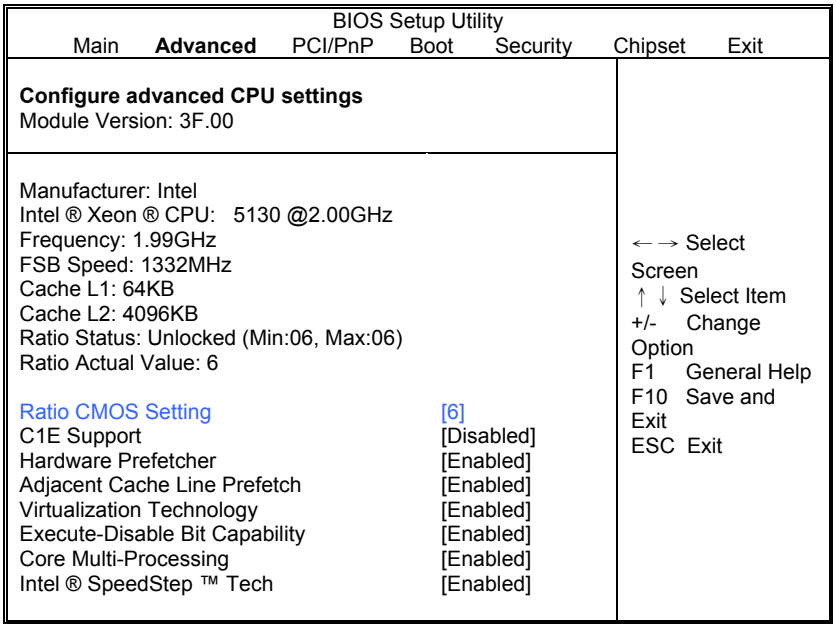
You can select any of the items in the left frame of the screen, such as Super I/O Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



Feature	Option	Description
Advanced Settings		
CPU Configuration	**Menu Item**	Options for CPU
IDE Configuration	**Menu Item**	Configure the IDE device(s)
Super IO Configuration	**Menu Item**	Configures Super IO Chipset Win627DHG
USB Configuration	**Menu Item**	Configure the USB support
ACPI Configuration	**Menu Item**	Section for Advanced ACPI Configuration
AHCI Configuration	**Menu Item**	Section for Advanced AHCI Configuration
APM Configuration	**Menu Item**	Section for APM configuration
Event Log Configuration	**Menu Item**	Mark as read, Clear or View Event Log statistics
Hardware Health Configuration	**Menu Item**	Configure/monitor the Hardware Health
Remote Access Configuration	**Menu Item**	Configure Remote Access

3.2.1 CPU Configuration

You can use this screen to view CPU Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

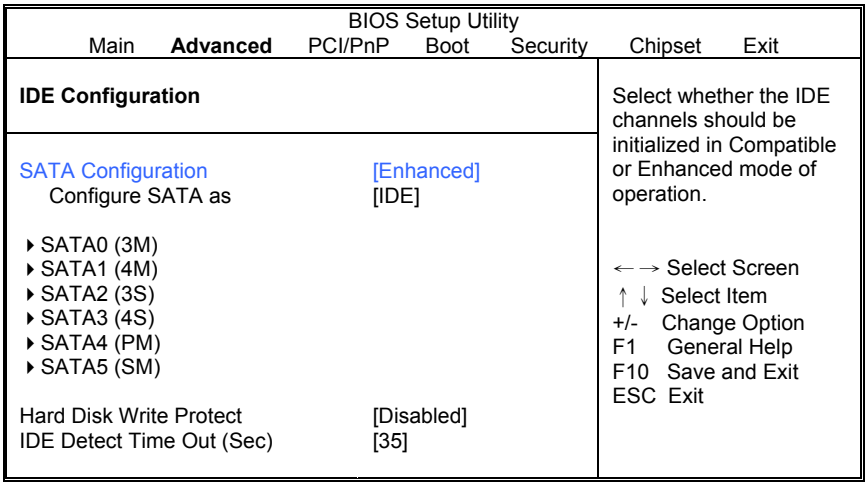


Feature	Option	Description
CPU Configuration		
Manufacturer	Read only	Displays information about CPU
Intel ® Xeon ® CPU		
Frequency		
FSB Speed		
Cache L1		
Cache L2		
Ratio Status		
Ratio Actual Value		
Ratio CMOS Setting	According to CPU ratio	It allows users to select the ratio of CPU frequency to front side bus. The default is auto-detected by BIOS. Use [+] or [-] to adjust values.

C1E Support	Enabled **Disabled**	Enable or disable the C1 Enhanced mode
Hardware Prefetcher	**Enabled** Disabled	When enabled, the processor's hardware prefetcher will be enabled and allowed to automatically prefetch data and code for the processor. When disabled, the processor's hardware prefetcher will be disabled.
Adjacent Cache Line Prefetch	**Enabled** Disabled	When enabled, the processor will retrieve the currently requested cache line, as well as the subsequent cache line. When disabled, the processor will only retrieve the currently requested cache line.
Virtualization Technology	**Enabled** Disabled	Intel Virtualization Technology is a set of platform features that support virtualization of platform hardware and multiple software environments. When enabled, it offers data center managers the ability to consolidate multiple workloads on one physical server system.
Execute-Disable Bit Capability	**Enabled** Disabled	Intel's Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system. Execute Disable Bit allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage and worm propagation.
Core Multi-Processing	**Enabled** Disabled	When disabled, it disables one execution core.
Intel® SpeedStep™ Tech	**Enabled** Disabled	Intel SpeedStep technology allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

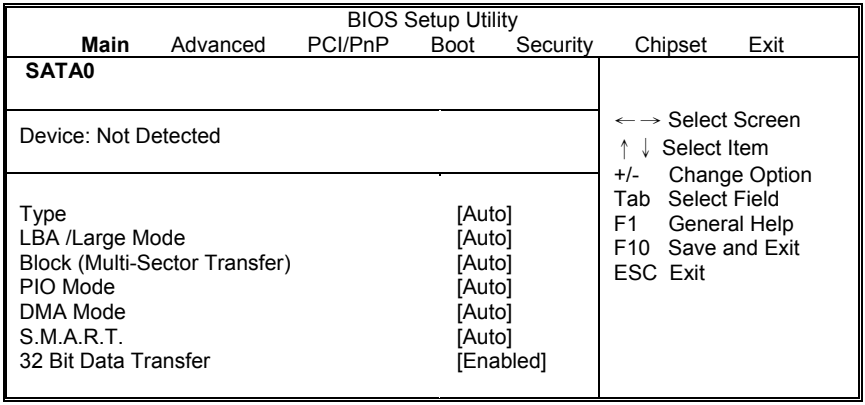
3.2.2 IDE Configuration Sub-Menu

You can use this screen to select options for the IDE Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



Feature	Option	Description
IDE Configuration		
SATA Configuration	**Enhanced** Compatible	This defines the operation mode of SATA channel.
Configure SATA as	**IDE** RAID AHCI	Select legacy IDE, RAID or AHCI as the SATA interface.
Hard Disk Write Protect	**Disabled** Enabled	Enable/Disable device write protection. This will be effective only if device is accessed through BIOS.
IDE Detect Time Out (Sec)	**0~35** (at 5 interval)	Select the time out value for detecting ATA/ATAPI device(s).

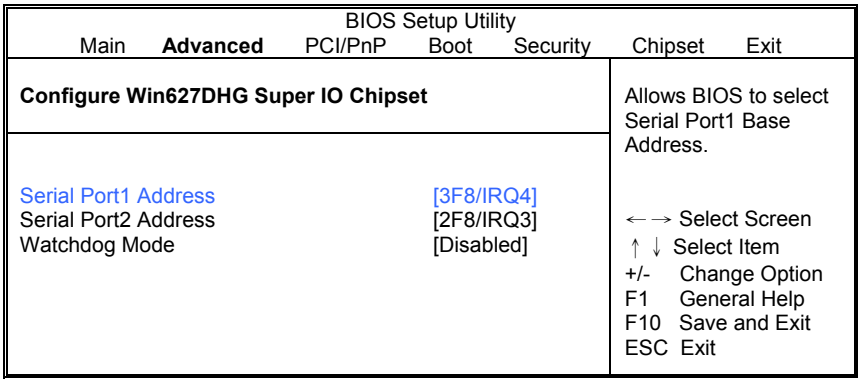
3.2.2.1 SATA0 ~ SATA5 Sub-Menu



Feature	Option	Description
SATA0		
Type	**Auto** Not Installed CD/DVD ARMD	Selects the type of device connected to the system.
LBA/Large Mode	**Auto** Disabled	Auto: Enabled LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled. Disabled: Disabled LBA Mode.
Block (Multi-Sector Transfer)	**Auto** Disabled	Disabled: The Data transfer from and to the device occurs one sector at a time. Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it.
PIO Mode	**Auto** 0~4 (at 1 interval)	Selects the PIO Mode. Select Auto to enhance hard disk performance by optimizing the hard disk timing.
DMA Mode	**Auto**	Selects DMA Mode. Auto: Auto detected.
S.M.A.R.T.	**Auto** Disabled Enabled	S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure.
32Bit Data Transfer	**Enabled** Disabled	Enables 32-bit to maximize the IDE hard disk data transfer rate.

3.2.3 Super IO Configuration Sub-Menu

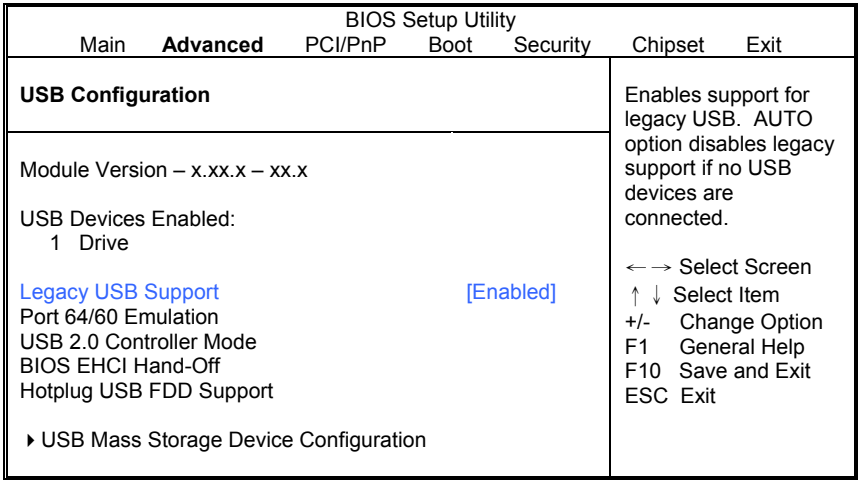
You can use this screen to select options for the Super I/O settings. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option



Feature	Option	Description
Configure Win627DHG Super IO Chipset		
Serial Port1 Address	**3F8 IRQ4**	Allow BIOS to select Serial Port1 Base Addresses.
	3E8 IRQ4	
	2E8 IRQ3	
	2F8 IRQ3	
	Disabled	
Serial Port2 Address	3F8 IRQ4	Allow BIOS to select Serial Port2 Base Addresses.
	3E8 IRQ4	
	2E8 IRQ3	
	2F8 IRQ3	
	Disabled	
Watchdog Mode	**Disabled**	POST: Watchdog timer counting, start at Power on, stop at OS Boot OS: Start at OS Boot Power on: Start at power on
	POST	
	OS	
	Power ON	

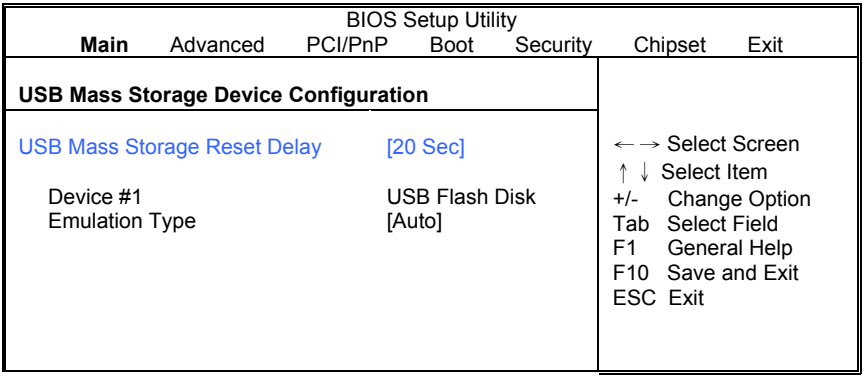
3.2.4 USB Configuration Sub-Menu

You can use this screen to view the USB Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
USB Configuration
Module Version – x.xx.x – xx.x
USB Devices Enabled:
1 Drive
Legacy USB Support [Enabled]
Port 64/60 Emulation
USB 2.0 Controller Mode
BIOS EHCI Hand-Off
Hotplug USB FDD Support
▸ USB Mass Storage Device Configuration
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
←→ Select Screen
↑ ↓ Select Item
+/- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
USB Configuration		
Legacy USB Support	Disabled Auto **Enabled**	Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
Port 64/60 Emulation	Enabled **Disabled**	This feature allows you to enable emulation of I/O ports 64h and 60h so that there is full PS/2 legacy support for USB keyboards and mice.
USB 2.0 Controller Mode	**Hi Speed** Full Speed	Configure the USB 2.0 controller in Hi Speed (480 Mbps) or Full Speed (12Mbps).
BIOS EHCI Hand-Off	**Enabled** Disabled	This is a work around for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.
Hotplug USB FDD Support	Enabled Disabled **Auto**	Enable or disable hotplug USB floppy support

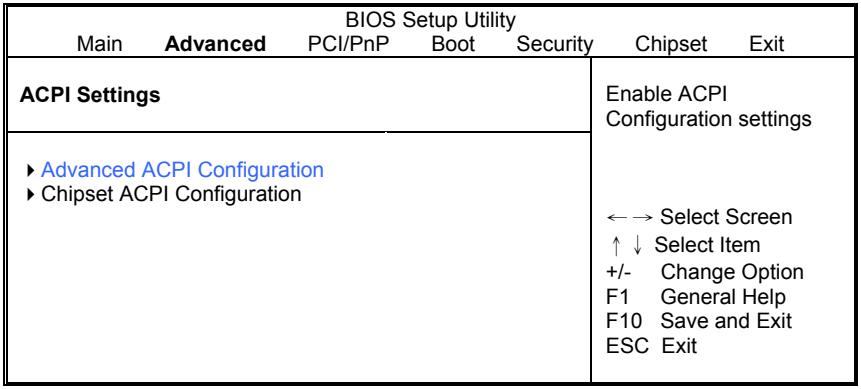
3.2.4.1 USB Mass Storage Device Configuration Sub-Menu


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
USB Mass Storage Device Configuration
USB Mass Storage Reset Delay [20 Sec]
Device #1 USB Flash Disk
Emulation Type [Auto]
← → Select Screen
↑ ↓ Select Item
+/- Change Option
Tab Select Field
F1 General Help
F10 Save and Exit
ESC Exit

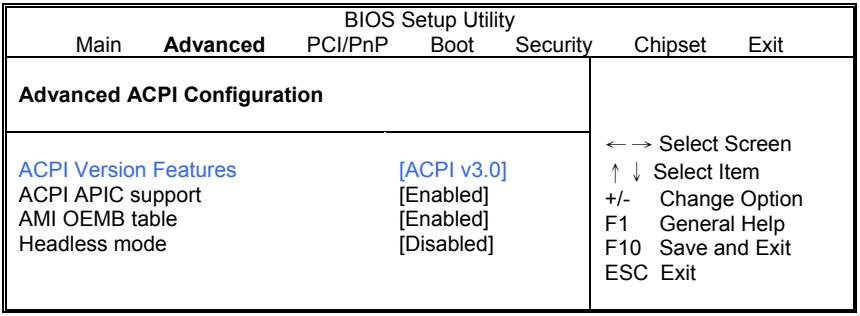
Feature	Option	Description
USB Mass Storage Device Configuration		
USB Mass Storage Reset Delay	10 Sec **20 Sec** 30 Sec 40 Sec	It enables you to set the number of seconds the POST waits for the USB mass storage device after the start unit command is sent.
Device #1	Read only	
Emulation Type	**Auto** Floppy Forced FDD Hard Disk CDROM	If Auto, USB devices less than 530 MB will be emulated as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD (Ex. ZIP drive).

3.2.5 ACPI Configuration Sub-Menu

Use this screen to select options for ACPI. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on this page. The screen is shown below.

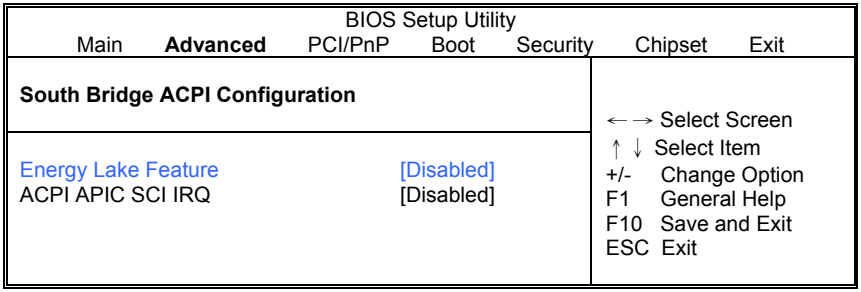


3.2.5.1 Advanced ACPI Configuration Sub-Menu



Feature	Option	Description
Advanced ACPI Configuration		
ACPI Version Features	**ACPI v3.0**	Set this value to allow or prevent the system to be complaint with the ACPI 2.0 specification.
	ACPI v2.0	
	ACPI v1.0	
ACPI APIC Support	**Enabled**	This option allows you to define whether or not to enable APIC features.
	Disabled	
AMI OEMB table	**Enabled**	Set this value to allow the ACPI BIOS to add a pointer to an OEMB table in the Root System Description Table (RSDT) table. Note: OEMB table is used to pass POST data to the AMI code during ACPI O/S operations.
	Disabled	
Headless mode	Enabled	Enable or disable Headless operation mode through ACPI.
	Disabled	

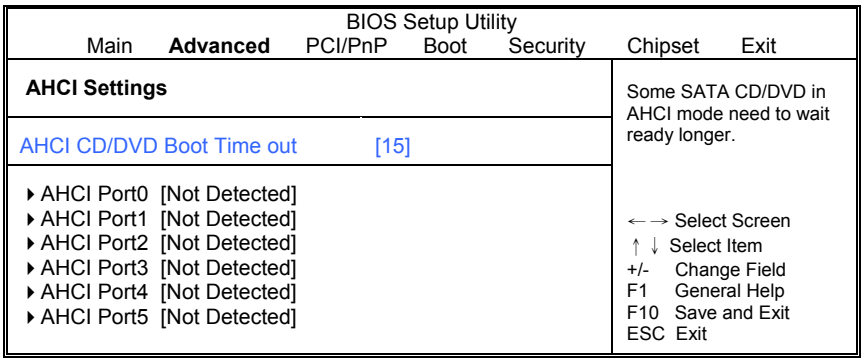
3.2.5.2 Chipset ACPI Configuration Sub-Menu



Feature	Option	Description
South Bridge ACPI Configuration		
Energy Lake Feature	**Disabled** Enabled	Allow you to configure Intel's Energy Lake power management technology. If you are running a Media Center you can install the Intel VIIV software to get the correct driver; otherwise disable the Energy Lake feature in BIOS (it relates purely to Intel's Quick Resume feature, which is generally useless).
ACPI APIC SCI IRQ	**Disabled** Enabled	Enable / Disable ACPI APIC SCI IRQ

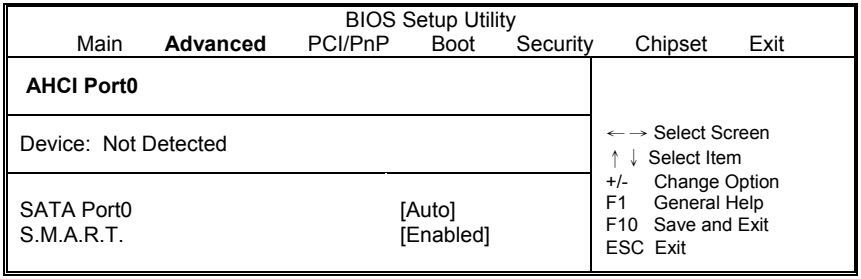
3.2.6 AHCI Configuration Sub-Menu

You can use this screen to view the AHCI Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
AHCI Settings
AHCI CD/DVD Boot Time out [15]
AHCI Port0 [Not Detected]
AHCI Port1 [Not Detected]
AHCI Port2 [Not Detected]
AHCI Port3 [Not Detected]
AHCI Port4 [Not Detected]
AHCI Port5 [Not Detected]
Some SATA CD/DVD in AHCI mode need to wait ready longer.
← → Select Screen
↑ ↓ Select Item
+/- Change Field
F1 General Help
F10 Save and Exit
ESC Exit

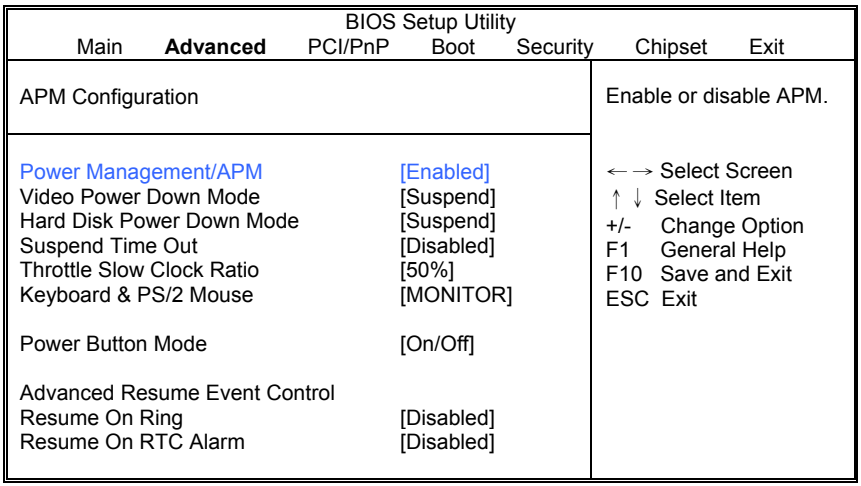
Feature	Option	Description
AHCI Configuration		
AHCI CD/DVD Boot Time Out	0	Some SATA CD/DVD in AHCI mode need to wait ready longer.
	5	
	10	
	15	
	20	
	25	
	30	
	35	

3.2.6.1 AHCI Port0/Port1/Port2/Port3/Port4/Port5 Sub-Menu



Feature	Option	Description
AHCI Port0 Configuration		
SATA Port0	**Auto** Not Installed	Select the type of device connected to the system.
S.M.A.R.T.	**Enabled** Disabled	S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure.

3.2.7 APM Configuration

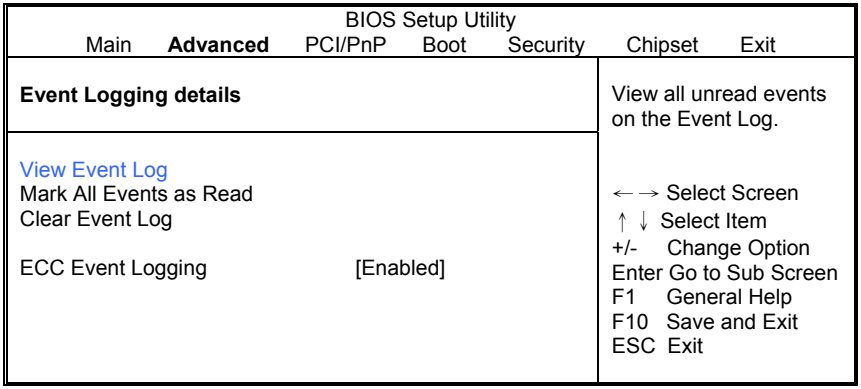

BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
APM Configuration
Enable or disable APM.
Power Management/APM [Enabled]
Video Power Down Mode [Suspend]
Hard Disk Power Down Mode [Suspend]
Suspend Time Out [Disabled]
Throttle Slow Clock Ratio [50%]
Keyboard & PS/2 Mouse [MONITOR]
Power Button Mode [On/Off]
Advanced Resume Event Control
Resume On Ring [Disabled]
Resume On RTC Alarm [Disabled]
← → Select Screen
↑ ↓ Select Item
+/- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
APM Configuration		
Power Management/APM	**Enabled**	Enable/Disable APM
	Disabled	
Video Power Down Mode	**Suspend**	Power Down Video in Suspend or Standby Mode.
	Disabled	
Hard Disk Power Down Mode	**Suspend**	Power Down Hard Disk in Suspend or Standby Mode.
	Disabled	
Suspend Time Out	**Disabled**	Go into Suspend in the specified Time.
	1 Min	
	2 Min	
	4 Min	
	8 Min	
	10 Min	
	20 Min	
	30 Min	
	40 Min	
	50 Min	
	60 Min	

Throttle Slow Clock Ratio	87.5%	Select the duty cycle in throttle mode
	75.0%	
	62.5%	
	50%	
	37.5%	
	25%	
	12.5%	
Keyboard & PS/2 Mouse	**MONITOR**	Monitor KBC Ports 60/64
	Ignore	
Power Button Mode	**On/Off**	Go into On/Off, or Suspend when Power Button is pressed.
	Suspend	
Resume On Ring	**Disabled**	Enable/Disable RI to generate a wake event
	Enabled	
Resume On RTC Alarm	**Disabled**	Enable/Disable RTC to generate a wake event
	Enabled	

3.2.8 Event Log Configuration Sub-Menu

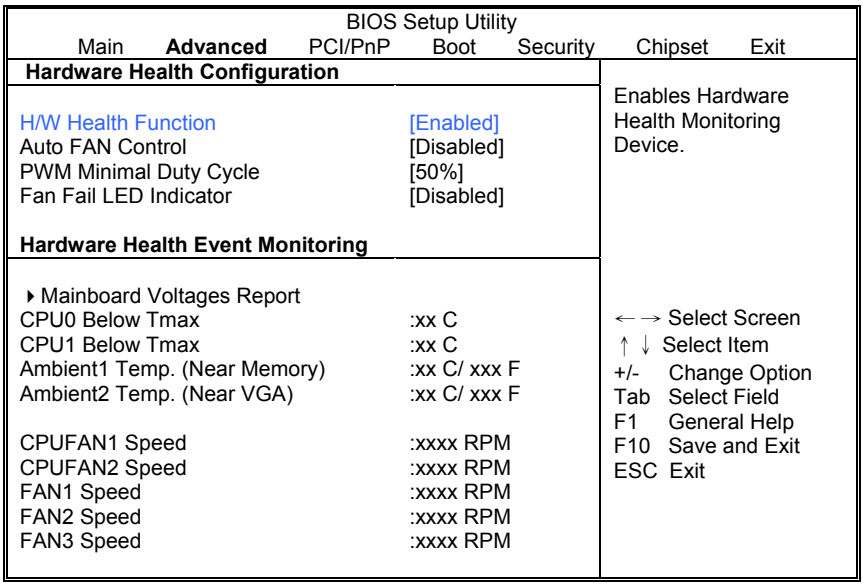
You can use this screen to view the Event Log Control Menu. This logs system events (such as CMOS clear) and writes the log into NVRAM. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Event Logging details
View all unread events on the Event Log.
View Event Log
Mark All Events as Read
Clear Event Log
ECC Event Logging [Enabled]
← → Select Screen
↑ ↓ Select Item
+/- Change Option
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Event Logging details		
View Event Log	—	Views all unread events on the Event Log.
Mark All Events as Read	OK Cancel	Marks all unread events as read.
Clear Event Log	OK Cancel	Erases all of events.
ECC Event Logging	**Enabled** Disabled	Enable or disable ECC Event Logging

3.2.9 Hardware Health Configuration Sub-Menu

You can use this screen to view the Hardware Health Configuration Settings. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Hardware Health Configuration
H/W Health Function [Enabled]
Auto FAN Control [Disabled]
PWM Minimal Duty Cycle [50%]
Fan Fail LED Indicator [Disabled]
Hardware Health Event Monitoring
Mainboard Voltages Report
CPU0 Below Tmax :xx C
CPU1 Below Tmax :xx C
Ambient1 Temp. (Near Memory) :xx C/ xxx F
Ambient2 Temp. (Near VGA) :xx C/ xxx F
CPUFAN1 Speed :xxxx RPM
CPUFAN2 Speed :xxxx RPM
FAN1 Speed :xxxx RPM
FAN2 Speed :xxxx RPM
FAN3 Speed :xxxx RPM
Enables Hardware Health Monitoring Device.
← → Select Screen
↑ ↓ Select Item
+/- Change Option
Tab Select Field
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Hardware Health Configuration		
H/W Health Function	**Enabled**	Enables Hardware Health Monitoring Device.
	Disabled	
Auto FAN Control	**Disabled**	FAN power duty cycle is auto dynamic programmed in selected temperature range. Disabled: Fan Power On. Enabled: Fan Power Duty Cycle=50%(32°C)-100%(0°C), see max (CPU0, CPU1)
	Enabled	
PWM Minimal Duty Cycle	**50%**	This item allows you to set minimum PWM Duty Cycle. Note: This item is hidden and will appear when **Auto FAN Power Control** is set to [Enabled].
	40%	
	30%	
	0%	
Fan Fail LED Indicator	**Disabled**	Enabled: Any FAN speed less than 800 RPM, the FAN Fail LED will be lighted.
	Enabled	

3.2.9.1 Mainboard Voltages Report Sub-Menu

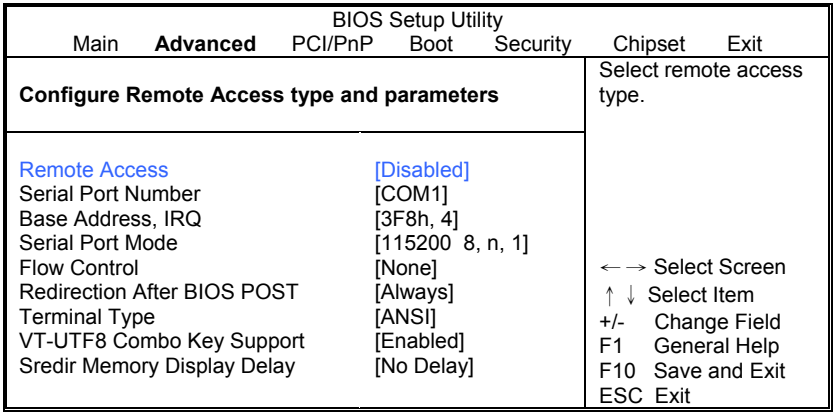
BIOS Setup Utility						
Main	**Advanced**	PCI/PnP	Boot	Security	Chipset	Exit

Board Voltages Event Monitoring		
CPU0 Vcore	: x.xxx V	
CPU1 Vcore	: x.xxx V	
12V	: x.xxx V	
V3.3V	: x.xxx V	
-12V	: x.xxx V	
VBat	: x.xxx V	
Vdimm	: x.xxx V	←→ Select Screen
1.5V	: x.xxx V	↑ ↓ Select Item
3.3Vsb	: x.xxx V	+/- Change Option
5V	: x.xxx V	Tab Select Field
		F1 General Help
		F10 Save and Exit
		ESC Exit

Read only. It can not be modified in user mode.

3.2.10 Remote Access Configuration Sub-Menu

You can use this screen to view the Remote Access Configuration Menu. This feature allows access to the Server remotely via serial port. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

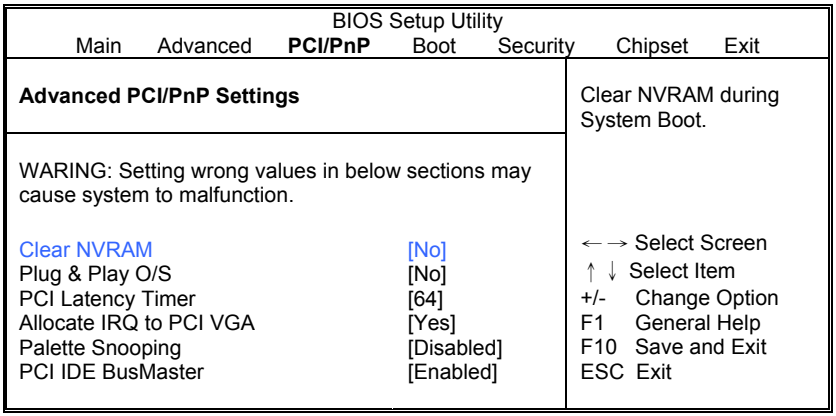

BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Configure Remote Access type and parameters
Remote Access [Disabled]
Serial Port Number [COM1]
Base Address, IRQ [3F8h, 4]
Serial Port Mode [115200 8, n, 1]
Flow Control [None]
Redirection After BIOS POST [Always]
Terminal Type [ANSI]
VT-UTF8 Combo Key Support [Enabled]
Sredir Memory Display Delay [No Delay]
Select remote access type.
← → Select Screen
↑ ↓ Select Item
+/- Change Field
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Configure Remote Access type and parameters		
Remote Access	Enabled	Enables remote access to system through serial port.
	Disabled	
Serial Port Number	**COM1**	Select Serial Port for console redirection. Make sure the selected port is enabled.
	COM2	
Base Address, IRQ	Read only	
Serial Port Mode	**115200 8,n,1**	Select Serial Port settings.
	57600 8,n,1	
	38400 8,n,1	
	19200 8,n,1	
	9600 8,n,1	

Flow Control	**None**	Select Flow Control for console redirection.
	Hardware	
	Software	
Redirection After BIOS POST	Disabled	Disable: Turns off the redirection after POST Boot Loader: Redirection is active during POST and during Boot Loader. Always: Redirection is always active. <Some OSs may not work if set to Always>
	Boot Loader	
	Always	
Terminal Type	**ANSI**	Select the target terminal type.
	VT100	
	VT-UTF8	
VT-UTF8 Combo Key Support	**Enabled**	Enable VT-UTF8 Combination key Support for ANSI/VT100 terminals.
	Disabled	
Sredir Memory Display Delay	**No Delay**	Gives the delay in seconds to display memory information
	Delay 1 Sec	
	Delay 2 Sec	
	Delay 4 Sec	

3.3 PCI PnP Menu

You can use this screen to view PnP (Plug & Play) BIOS Configuration Menu. This menu allows the user to configure how the BIOS assigns resources & resolves conflicts. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

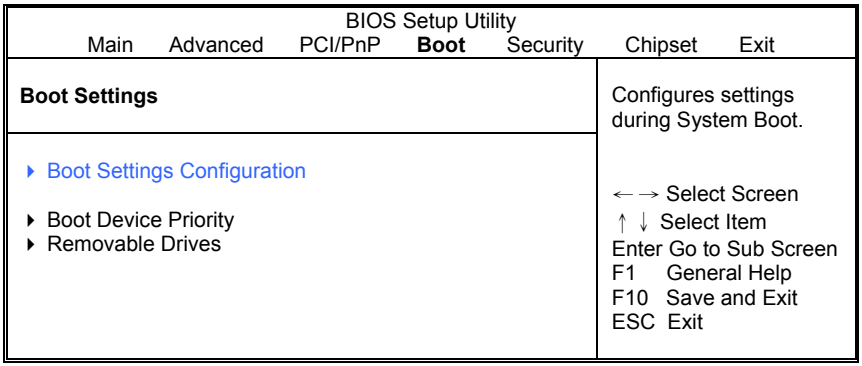

BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARING: Setting wrong values in below sections may cause system to malfunction.
Clear NVRAM [No]
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Enabled]
Clear NVRAM during System Boot.
← → Select Screen
↑ ↓ Select Item
+/- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Advanced PCI/PnP Settings		
Clear NVRAM	**No**	Clears NVRAM during system Boot.
	Yes	
Plug & Play OS	Yes	No: lets the BIOS configure all the devices in the system. Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
	No	
PCI Latency Timer	32	This setting controls how many PCI clocks each PCI device can hold the bus before another PCI device takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. Values in units of PCI clocks for PCI device latency timer register.
	64	
	96	
	128	
	160	
	192	
	224	
	248	

Allocate IRQ to PCI VGA	**Yes**	Yes: assigns IRQ to PCI VGA card if card requests IRQ.
	No	
Palette Snooping	**Disabled**	This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled. Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.
	Enabled	
PCI IDE BusMaster	Disabled	Enabled: BIOS uses PCI bus mastering for reading / writing to IDE drives.
	Enabled	

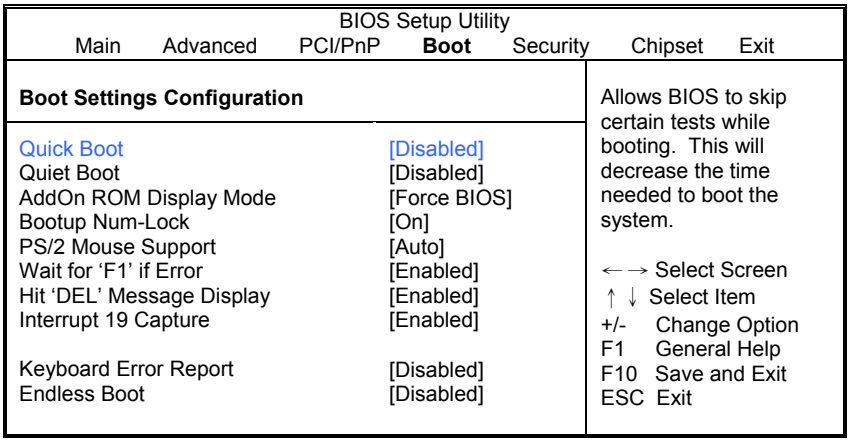
3.4 Boot Menu

You can display Boot Setup option by highlighting it using the Arrow (↑/↓) keys and pressing Enter. The settings are described on the following pages.



3.4.1 Boot Settings Configuration Sub-Menu

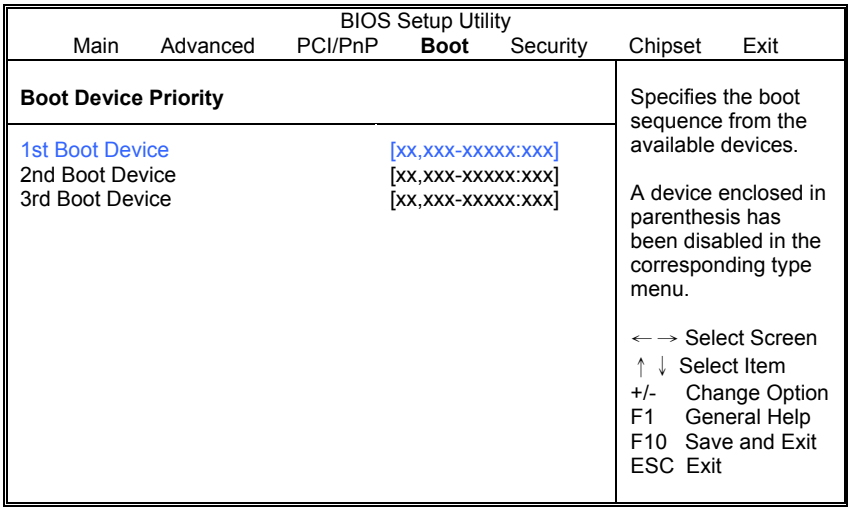
Use this screen to select options for the Boot Settings Configuration. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Boot Settings Configuration
Quick Boot [Disabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
PS/2 Mouse Support [Auto]
Wait for 'F1' if Error [Enabled]
Hit 'DEL' Message Display [Enabled]
Interrupt 19 Capture [Enabled]
Keyboard Error Report [Disabled]
Endless Boot [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← → Select Screen
↑ ↓ Select Item
+/- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Boot Settings Configuration		
Quick Boot	Enabled	This option allows user bypass BIOS self test during POST.
	Disabled	
Quiet Boot	**Disabled**	Disabled: displays normal POST messages. Enabled: displays OEM log instead of POST messages.
	Enabled	
Add On ROM Display Mode	**Force BIOS**	Allows user to force BIOS/Option ROM of add-on cards to be displayed during quiet boot.
	Keep Current	
Bootup Num-Lock	**On**	Selects Power-on state for Numlock.
	Off	
PS/2 Mouse Support	Enabled	Selects support for PS/2 Mouse.
	Disabled	
	Auto	
Wait for 'F1' If Error	**Enabled**	Waits for F1 key to be present if error occurs.
	Disabled	
Hit 'DEL' Message Display	**Enabled**	Displays "Press DEL to run Setup" in POST.
	Disabled	
Interrupt 19 Capture	Disabled	Enabled: allows option ROMs to trap interrupt 19.
	Enabled	
Keyboard Error Report	**Disabled**	Enable / Disable Keyboard error report.
	Enabled	
Endless Boot	**Disabled**	Enable/Disable endless loop boot from BBS table.
	Enabled	

3.4.2 Boot Device Priority

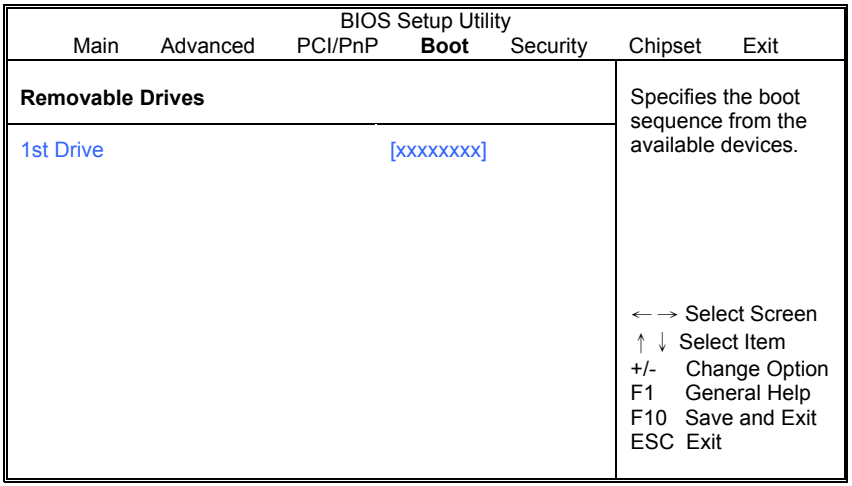
Use this screen to select options for the Boot Device Priority. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
Boot Device Priority
1st Boot Device [xx,xxx-xxxxx:xxx]
2nd Boot Device [xx,xxx-xxxxx:xxx]
3rd Boot Device [xx,xxx-xxxxx:xxx]
Specifies the boot sequence from the available devices.
A device enclosed in parenthesis has been disabled in the corresponding type menu.
← → Select Screen
↑ ↓ Select Item
+/- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
Boot Device Priority		
1st Boot Device 2nd Boot Device 3rd Boot Device	**xx,xxx-xxxxx:xxx**	Settings for boot priority. These can be customized depending on your preference.
	xx,xxx-xxxxx:xxx	
	Disabled	

3.4.3 Removable Drives

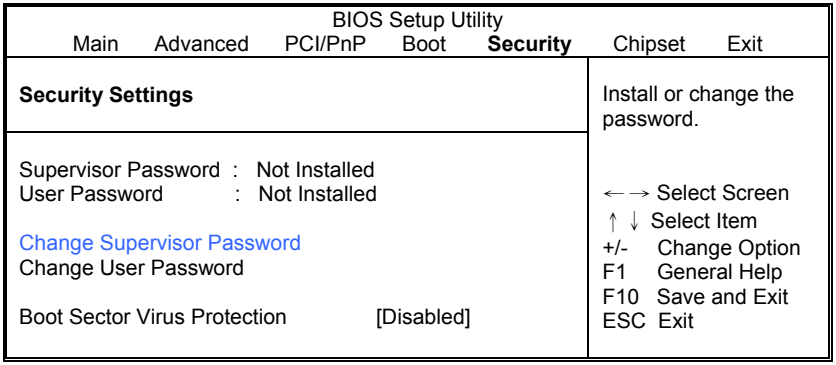
Use this screen to select options for the Removable Drives. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.



Feature	Option	Description
Removable Drives		
1st Drive	**xx,xxx-xxxxx:xxx** Disabled	Specifies the boot sequence from the available devices.

3.5 Security Menu

The system can be configured so that all users must enter a password every time the system boots or when BIOS Setup is entered, using either the Supervisor password or User password. The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a one to six character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must clear CMOS and reconfigure.



Feature	Option	Description
Security Settings		
Supervisor Password:	**Not Installed** Installed	If the password has been set, Installed displays. If no password is set, Not Installed displays.
User Password:	**Not Installed** Installed	If the password has been set, Installed displays. If no password is set, Not Installed displays.
Change Supervisor Password	—	Selects this option to change or install Supervisor Password.
Change User Password	—	Selects this option to change or install User Password.
Boot Sector Virus Protection	**Disabled** Enabled	When it is set to [Enabled], BIOS will issue a virus warning message and beep if a write to the boot sector or the partition table of the HDD is attempted.

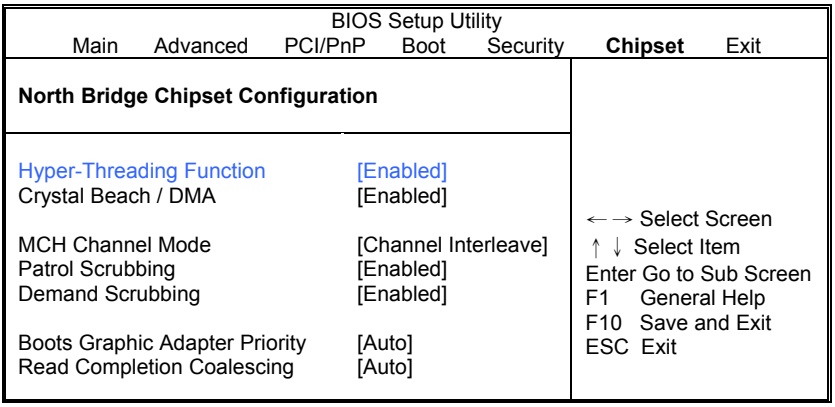
3.6 Chipset Menu

This menu allows the user to customize functions of the AMD Chipsets. North Bridge configuration contains options for Memory & CPU settings. Select a menu by highlighting it using the Arrow (↑/↓) keys and pressing Enter. The settings are described on the following pages.

BIOS Setup Utility Main Advanced PCI/PnP Boot Security **Chipset** Exit	
Advanced Chipset Settings	Options for NB
WARNING: Setting wrong values in below sections may cause system to malfunction. ▸ North Bridge Configuration ▸ South Bridge Configuration	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

3.6.1 North Bridge Configuration Sub-Menu

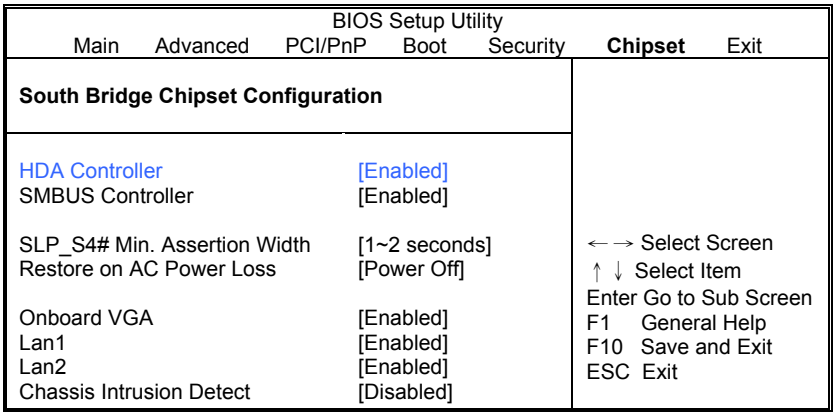
This menu gives options for customizing North Bridge Chipset settings. Select a menu by highlighting it using the Arrow (↑/↓) keys and pressing Enter. The settings are described on the following pages.


BIOS Setup Utility
Main Advanced PCI/PnP Boot Security Chipset Exit
North Bridge Chipset Configuration
Hyper-Threading Function [Enabled]
Crystal Beach / DMA [Enabled]
MCH Channel Mode [Channel Interleave]
Patrol Scrubbing [Enabled]
Demand Scrubbing [Enabled]
Boots Graphic Adapter Priority [Auto]
Read Completion Coalescing [Auto]
← → Select Screen
↑ ↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit

Feature	Option	Description
North Bridge Chipset Configuration		
Hyper-Threading Function	**Enabled**	Enable or disable hyper-threading functionality
	Disabled	
Crystal Beach / DMA	Disabled	Crystal Beach / DMA configuration
	Enabled	
MCH Channel Mode	Channel Sequencing	Sequencing: allocates address channel 0 then 1. Interleaving: interleaves channel across channels. Single Channel: forces single ch-0.
	Channel Interleave	
	Single Channel 0	
Patrol Scrubbing	**Enabled**	ECC patrol scrubbing enabled / disabled
	Disabled	
Demand Scrubbing	**Enabled**	ECC demand scrubbing enabled / disabled
	Disabled	
Boots Graphic Adapter Priority	**Auto**	Select which graphic controller to use as the primary boot device.
	Onboard VGA	
Read Completion Coalescing	Disabled	Read returns of > 64B
	Enabled	
	Auto	

3.6.2 South Bridge Configuration Sub-Menu

This menu gives options for customizing South Bridge Chipset settings. Select a menu by highlighting it using the Arrow (↑/↓) keys and pressing Enter. The settings are described on the following pages.



Feature	Option	Description
South Bridge Chipset Configuration		
HDA Controller (S5376WAG2NR only)	**Enbled**	Enable or disable HDA controller
	Disabled	
SMBUS Controller	**Enabled**	Enable or disable SMBUS controller
	Disabled	
SLP_S4# Min. Assertion Width	4-5 seconds	Select Timing for SLP_S4#
	3-4 seconds	
	2-3 seconds	
	1-2 seconds	
Restore on AC Power Loss	**Power Off**	Configure how the system board responds to a power failure.
	Power On	
	Last State	
Onboard VGA	**Enabled**	Enable or disable Onboard VGA controller
	Disabled	
Lan1/Lan2	Disabled	Enable or disable LAN1/LAN2
	Enabled	
Chassis Intrusion Detect	**Disabled**	Enable/Disable the function of chassis intrusion detect. When chassis open event is detected, BIOS will record the event.
	Enabled	

3.7 Exit Menu

You can display an Exit BIOS Setup option by highlighting it Arrow (↑/↓) keys and pressing Enter.

BIOS Setup Utility Main Advanced PCI/PnP Boot Security Chipset **Exit**	
Exit Options	Exit system setup after saving the changes. F10 key can be used for this operation. ←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Save Changes and Exit Discard Changes and Exit Discard Charges Load Optimal Defaults Load Failsafe Defaults	

Save Changes and Exit
Use this option to exit setup utility and re-boot.
All new selections you have made are stored into CMOS.
System will use the new settings to boot up.

Discard Changes and Exit
Use this option to exit setup utility and re-boot.
All new selections you have made are not stored into CMOS.
System will use the old settings to boot up.

Discard Changes
Use this option to restore all new setup values that you have made but not saved into CMOS.

Load Optimal Defaults
Use this option to load default performance setup values.
Use this option when system CMOS values have been corrupted or modified incorrectly.

Load Failsafe Defaults
Use this option to load all default failsafe setup values.
Use this option when troubleshooting.

Chapter 4: Diagnostics

NOTE: if you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at: http://www.tyan.com.

4.1 Beep Codes

Fatal errors, which halt the boot process, are communicated through two kinds of audible beeps.
- Eight short beeps: It indicates that a video error has occurred.
- A single long beep repeatedly: It indicates that a DRAM error has occurred.

The most common type of error is a memory error.

Before contacting your vendor or TYAN Technical Support, be sure that you note as much as you can about the beep code length and order that you experience. Also, be ready with information regarding add-in cards, drives and O/S to speed the support process and come to a quicker solution.

4.2 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN web site: http://www.tyan.com/

NOTE: Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damages done by the end user.

4.3 AMIBIOS Post Code

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer.Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.

Checkpoint	Description
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).

NOTE

Appendix: SMDC Information

Overview

TYAN Server Management Daughter Card (SMDC) is a powerful yet cost-efficient solution for high-end server management hardware packages. TYAN's goal is to provide remote system monitoring and control even when the operating system is absence or simply fails. This empowers TYAN's server board with advanced industrial-standard features.

TYAN SMDC is a snap-in card that provides essential server management solution. It enables any IT Manager by providing multi-interfaces to access the hardware remotely and perform **monitor**, **control** and **diagnose** activities effectively.

TYAN SMDC is not a peripheral card. Unlike regular peripheral card such as AGP card, Network card or SCSI card, SMDC does not require any hardware specific driver. As long as a standby power comes into the system, SMDC will begin looking after the system.

TYAN SMDC provides diversified methods to communicate with the hardware. IT manager has the flexibility to choose among *Keyboard Controller Style* (KCS), *Block Transfer* (BT) style, Intelligent Chassis Management Bus (ICMB), Intelligent Platform Management Bus (IPMB), Emergency Management Port (EMP) and standard IPMI-Over-LAN communication as defined in latest IPMI 1.5 specification.

TYAN SMDC is compatible with all IPMI-compliance software as well as TYAN System Operator™ (TSO) software package.

By adding SMDC, TYAN's server board becomes a highly manageable and IPMI compatible system with all the advanced features suggesting in IPMI Spec.

More detailed information on TYAN's SMDC card can be found on our website: http://www.tyan.com

Features of TYAN Server Management

Monitor various system components remotely
-such as fans, processor temperature, and more

Remote power on and power off

Console redirect
-the ability to view system remotely

Alert and error actions
-such as audible beep, e-mail, power down and reboot

SMDC runs on stand-by power
-the SMDC will continue to function, even if the system is not powered on

How SMDC and TSO Work

The brief descriptions below will help explain how these items function.

	Agent – a system with SMDC installed The SMDC is installed in the Agent system that uses a compatible/supported TYAN motherboard.
	Manager – manages the Agent The Manger is set up to manage the Agent that has the SMDC. The Manager and Agent should be located in the same place.
	Console – communicates with Manager The Console is used to monitor and control the Agent through the Manager.

Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs at only 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path, can carry. Greater bandwidth, then, also results in greater speed.

BBS (BIOS Boot Specification): is a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails for some reason. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, and provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data, usually from an application, though it is also used when printing, and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it, all at once, to a disk drive. While this improves system performance --- reading to or writing from a disk drive a single time is much faster than doing so repeatedly --- there is also the possibility of losing your data should the system crash. Information stored in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times, since the needed information is stored in the SRAM instead of in the slow DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Cache size: refers to the physical size of the cache onboard. This should not be confused with the cacheable area, which is the total amount of memory which can be scanned by the system in search of data to put into the cache. A typical setup would be a cache size of 512KB, and a cacheable area of 512MB. In this case, up to 512KB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

Closed and open jumpers: jumpers and jumper pins are active when they are “on” or “closed”, and inactive when they are “off” or “open”.

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): is a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM sockets, because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with

IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.
Doze mode: in this mode, only the CPU's speed is slowed.
DRAM (Dynamic RAM): widely available, very affordable form of RAM which has the unfortunate tendency to lose data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN's BIOS updates can be found at http://www.tyan.com

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Fault-tolerance: a term describing a system where one component can quickly be replaced without causing a loss of service, such as in a RAID system.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX, although TYAN also makes some Baby-AT and ATX Footprint boards.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

Handshaking: a process where two devices initiate communications. One device, typically the server, sends a message to another device, typically a client, in order to request establishment of a communications channel. The two devices will then exchange messages back and forth in order to settle on a communications protocol.

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

I**/O (Input/Output):** the connection between your computer and another piece of hardware (mouse, keyboard, etc.)
Initial Program Load (IPL): a feature built into BBS-compliant devices, describing those devices as capable of loading and executing an OS, as well as being able to provide control back to the BIOS if the loading attempt fails.

IPL: see Initial Program Load.

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

ISA (Industry Standard Architecture): a slower 8- or 16-bit bus (data pathway).

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This is most common when the system sends data out to a peripheral device, and it waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

Mirroring: see RAID.

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

OEMs (Original Equipment Manufacturers): Compaq or IBM package other companies' motherboards and hardware inside their case and sell them.

Parallel port: transmits the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a type of RAM that can maintain it's data as long as power is provided to the memory chips. In this configuration, SRAM requests are pipelined, which means that larger packets of data are sent to the memory at one time, and acted upon quickly. This type of SRAM operates at bus speeds higher than 66MHz.

PM timers (Power Management timers): software timers that count down the number of seconds or minutes until the system times out and enters sleep, suspend, or doze mode.
PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Novice end users can simply plug them into a computer that is running on a Plug-n-Play aware operating system (such as Windows 98), and go to work. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly, also the multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAIDIOS: stands for RAID I/O Steering, a type of RAID technology from Intel. RAIDIOS is a specification used to enable an embedded I/O controller, embedded on the motherboard, to be used as just an I/O controller or to be the I/O component of a hardware RAID subsystem. The RAIDIOS circuit allows an I/O Processor (either embedded on the motherboard or on an add-in card) to configure the I/O controller and service the I/O controller's interrupts. The I/O controller and the I/O Processor together are two of the primary components of a hardware RAID subsystem.

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data, is often used to refer to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SATA (Serial ATA): is an evolutionary replacement for the Parallel ATA physical storage interface. Serial ATA is a drop-in solution in that it is compatible with today's software and operating systems. It will provide for systems which are easier to design, with cables that are simpler to route and install, smaller cable connectors, and lower voltage requirements.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays

associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SIMM (Single In-line Memory Module): formally the most common form of RAM for motherboards. They must be installed in pairs, and do not have the carrying capacity or the speed of DIMM modules.

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

SSI (Server System Infrastructure): an industry initiative intended to provide ready-to-use design specifications for common server hardware elements (chassis, power supplies, and racks) to promote and support server industry growth.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

Striping: see RAID

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard

V-SYNC: controls the vertical scanning properties of the monitor.

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shift the processor over and down, guiding into the board and locking it into place.

Technical Support

If a problem arises with your system, you should turn to your dealer for help first. Your system has most likely been configured by them, and they should have the best idea of what hardware and software your system contains. Furthermore, if you purchased your system from a dealer near you, you can bring your system to them to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.TYAN.com
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

This device may not cause harmful interference, and
This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to

radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and the receiver.
Plug the equipment into an outlet on a circuit different from that of the receiver.
Consult the dealer on an experienced radio/television technician for help.

Notice for Canada
This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

Notice for Europe (CE Mark)
This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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